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<110> KOSAN BIOSCIENCES, Inc.
 REEVES, CHRISTOPHER
 CHU, DANIEL
 KHOSLA, CHAITAN
 SANTI, DANIEL
 WU, KAI

<120> POLYKETIDES ENCODING THE *fkba* GENE OF THE FK-520 POLYKETIDE SYNTHASE
 GENE CLUSTER

<130> 30062-20026.11

<140> 09/940,316

<141> 2001-08-27

<150> 09/410,551

<151> 1999-10-01

<150> US 60/139,650

<151> 1999-06-17

<150> US 60/123,810

<151> 1999-03-11

<150> US 60/102,748

<151> 1998-10-02

<160> 72

<170> FastSEQ for Windows Version 4.0

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<211> 77536

<212> DNA

<213> *Streptomyces hygroscopicus*

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<221> CDS

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SEQUENCE LISTING

<110> REEVES, CHRISTOPHER
CHU, DANIEL
KHOSLA, CHAITAN
SANTI, DANIEL
WU, KAI

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CONSTRUCTS THEREFOR

<130> 30062-20026.00

<140> 09/410,551

<141> 1999-10-01

<160> 71

<170> PatentIn Ver. 2.0

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<223> Description of Artificial Sequence: primer

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gcggctagct gctcgcccat cgcgggatgc

30

<210> 10

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 10

gatgtacagc tcgagtcggc acgcccggcc gcatc

35

<210> 11

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 11

cgactcatt aagccatgca tcc

23

<210> 12

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<211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 12
 atcctaggcg ggcrsggygtg tcgtccttcg g

31

<210> 13
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 13
 atgctagccg ccgcgttccc cgtcttcgcg cg

32

<210> 14
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 14
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32

<210> 15
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 15
 atctcgagcc agtascgctg gtgytggaag g

31

<210> 16
 <211> 4478
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS

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<222> (3) .. (4466)

<400> 16

ag atc tgg cag ctc gcc gaa gcg ctg ctg acg ctc gtc cgg gag agc	47
Ile Trp Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser	
1 5 10 15	
acc gcc gcc gtg ctc ggc cac gtg ggt ggc gag gac atc ccc gcg acg	95
Thr Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr	
20 25 30	
gcg gcg ttc aag gac ctc ggc atc gac tcg ctc acc gcg gtc cag ctg	143
Ala Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu	
35 40 45	
cgc aac gcc ctc acc gag gcg acc ggt gtg cgg ctg aac gcc acg gcg	191
Arg Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala	
50 55 60	
gtc ttc gac ttc ccg acc ccg cac gtg ctc gcc ggg aag ctc ggc gac	239
Val Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp	
65 70 75	
gaa ctg acc ggc acc cgc gcg ccc gtc gtg ccc cgg acc gcg gcc acg	287
Glu Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr	
80 85 90 95	
gcc ggt gcg cac gac gag cgg ctg gcg atc gtg gga atg gcc tgc cgg	335
Ala Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg	
100 105 110	
ctg ccc ggc ggg gtc gcg tca ccc gag gag ctg tgg cac ctc gtg gca	383
Leu Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala	
115 120 125	
tcc ggc acc gac gcc atc acg gag ttc cgg acg gac cgc ggc tgg gac	431
Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp	
130 135 140	
gtc gac gcg atc tac gac cgg gac ccc gac gcg atc ggc aag acc ttc	479
Val Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe	
145 150 155	
gtc cgg cac ggt ggc ttc ctc acc ggc gcg aca ggc ttc gac gcg gcg	527
Val Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala	
160 165 170 175	
ttc ttc ggc atc agc cgg cgc gag gcc ctc gcg atg gac cgg cag cag	575
Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln	
180 185 190	
cgg gtg ctc ctg gag acg tcg tgg gag gcg ttc gaa agc gcc ggc atc	623
Arg Val Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile	
195 200 205	
acc cgg gac tcg acc cgc ggc agc gac acc ggc gtg ttc gtc ggc gcc	671
Thr Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala	
210 215 220	

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tcc	tcc	tac	ggg	tac	ggc	acc	ggg	gac	gac	ggc	ttc	ggc	gcg			719
Phe	Ser	Tyr	Gly	Tyr	Gly	Thr	Gly	Ala	Asp	Thr	Asp	Gly	Phe	Gly	Ala	
	225					230					235					
acc	ggc	tcc	cag	acc	agt	gtg	ctc	tcc	ggc	cgg	ctg	tcc	tac	ttc	tac	767
Thr	Gly	Ser	Gln	Thr	Ser	Val	Leu	Ser	Gly	Arg	Leu	Ser	Tyr	Phe	Tyr	
	240				245					250					255	
ggg	ctg	gag	ggg	cgg	gcg	gtc	acg	gtc	gac	acg	gcg	tgt	tcc	tcc	tcc	815
Gly	Leu	Glu	Gly	Pro	Ala	Val	Thr	Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	
				260					265						270	
ctg	gtg	gcg	ctg	cac	cag	gcc	ggg	cag	tcc	ctg	cgc	tcc	ggc	gaa	tgc	863
Leu	Val	Ala	Leu	His	Gln	Ala	Gly	Gln	Ser	Leu	Arg	Ser	Gly	Glu	Cys	
				275				280					285			
tcc	ctc	gcc	ctg	gtc	ggc	ggc	gtc	acg	gtg	atg	gcg	tct	ccc	ggc	ggc	911
Ser	Leu	Ala	Leu	Val	Gly	Gly	Val	Thr	Val	Met	Ala	Ser	Pro	Gly	Gly	
		290					295					300				
ttc	gtg	gag	ttc	tcc	cgg	cag	cgc	ggc	ctc	gcg	cgg	gac	ggc	cgg	gcg	959
Phe	Val	Glu	Phe	Ser	Arg	Gln	Arg	Gly	Leu	Ala	Pro	Asp	Gly	Arg	Ala	
	305					310					315					
aag	gcg	ttc	ggc	gcg	ggg	gcg	gac	ggc	acg	agc	ttc	gcc	gag	ggg	gcc	1007
Lys	Ala	Phe	Gly	Ala	Gly	Ala	Asp	Gly	Thr	Ser	Phe	Ala	Glu	Gly	Ala	
	320				325					330					335	
ggg	gtg	ctg	atc	gtc	gag	agg	ctc	tcc	gac	gcc	gaa	cgc	aac	ggg	cac	1055
Gly	Val	Leu	Ile	Val	Glu	Arg	Leu	Ser	Asp	Ala	Glu	Arg	Asn	Gly	His	
				340					345					350		
acc	gtc	ctg	gcg	gtc	gtc	cgt	ggg	tcc	gcg	gtc	aac	cag	gat	ggg	gcc	1103
Thr	Val	Leu	Ala	Val	Val	Arg	Gly	Ser	Ala	Val	Asn	Gln	Asp	Gly	Ala	
			355					360					365			
tcc	aac	ggg	ctg	tcc	gcg	cgg	aac	ggg	cgg	tcc	cag	gag	cgg	gtg	atc	1151
Ser	Asn	Gly	Leu	Ser	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Glu	Arg	Val	Ile	
		370					375					380				
cgg	cag	gcc	ctg	gcc	aac	gcc	ggg	ctc	acc	cgg	gcg	gac	gtg	gac	gcc	1199
Arg	Gln	Ala	Leu	Ala	Asn	Ala	Gly	Leu	Thr	Pro	Ala	Asp	Val	Asp	Ala	
	385					390					395					
gtc	gag	gcc	cac	ggc	acc	ggc	acc	agg	ctg	ggc	gac	ccc	atc	gag	gca	1247
Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Arg	Leu	Gly	Asp	Pro	Ile	Glu	Ala	
	400			405						410					415	
cag	gcg	gta	ctg	ggc	acc	tac	gga	cag	gag	cgc	gcc	acc	ccc	ctg	ctg	1295
Gln	Ala	Val	Leu	Ala	Thr	Tyr	Gly	Gln	Glu	Arg	Ala	Thr	Pro	Leu	Leu	
				420				425						430		
ctg	ggc	tcc	ctg	aag	tcc	aac										

gtc gcc ggc atc atc aag atg gtg cag gcc ctc cgg cac ggg gag ctg	1391
Val Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu	
450 455 460	
ccg ccg acg ctg cac gcc gac gag ccg tcg ccg cac gtc gac tgg acg	1439
Pro Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr	
465 470 475	
gcc ggc gcc gtc gaa ctg ctg acg tcg gcc cgg ccg tgg ccc gag acc	1487
Ala Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr	
480 485 490 495	
gac cgg cct agg cgg gca ggc gtg tcg tcc ttc ggg atc agt ggc acc	1535
Asp Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr	
500 505 510	
aac gcc cac gtc atc ctg gaa agc gca ccc ccc act cag cct gcg gac	1583
Asn Ala His Val Ile Leu Glu Ser Ala Pro Pro Thr Gln Pro Ala Asp	
515 520 525	
aac gcg gtg atc gag cgg gca ccg gag tgg gtg ccg ttg gtg att tcg	1631
Asn Ala Val Ile Glu Arg Ala Pro Glu Trp Val Pro Leu Val Ile Ser	
530 535 540	
gcc agg acc cag tcg gct ttg act gag cac gag ggc cgg ttg cgt gcg	1679
Ala Arg Thr Gln Ser Ala Leu Thr Glu His Glu Gly Arg Leu Arg Ala	
545 550 555	
tat ctg gcg gcg tcg ccc ggg gtg gat atg ccg gct gtg gca tcg acg	1727
Tyr Leu Ala Ala Ser Pro Gly Val Asp Met Arg Ala Val Ala Ser Thr	
560 565 570 575	
ctg gcg atg aca cgg tcg gtg ttc gag cac cgt gcc gtg ctg ctg gga	1775
Leu Ala Met Thr Arg Ser Val Phe Glu His Arg Ala Val Leu Leu Gly	
580 585 590	
gat gac acc gtc acc ggc acc gct gtg tct gac cct cgg gcg gtg ttc	1823
Asp Asp Thr Val Thr Gly Thr Ala Val Ser Asp Pro Arg Ala Val Phe	
595 600 605	
gtc ttc ccg gga cag ggg tcg cag cgt gct ggc atg ggt gag gaa ctg	1871
Val Phe Pro Gly Gln Gly Ser Gln Arg Ala Gly Met Gly Glu Glu Leu	
610 615 620	
gcc gcc gcg ttc ccc gtc ttc gcg cgg atc cat cag cag gtg tgg gac	1919
Ala Ala Ala Phe Pro Val Phe Ala Arg Ile His Gln Gln Val Trp Asp	
625 630 635	
ctg ctc gat gtg ccc gat ctg gag gtg aac gag acc ggt tac gcc cag	1967
Leu Leu Asp Val Pro Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln	
640 645 650 655	
ccg gcc ctg ttc gca atg cag gtg gct ctg ttc ggg ctg ctg gaa tcg	2015
Pro Ala Leu Phe Ala Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser	
660 665 670	

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tgg ggt gta cga ccg gac gcg gtg atc ggc cat tcg gtg ggt gag ctt	2063
Trp Gly Val Arg Pro Asp Ala Val Ile Gly His Ser Val Gly Glu Leu	
675 680 685	
gcg gct gcg tat gtg tcc ggg gtg tgg tcg ttg gag gat gcc tgc act	2111
Ala Ala Ala Tyr Val Ser Gly Val Trp Ser Leu Glu Asp Ala Cys Thr	
690 695 700	
ttg gtg tcg gcg ccg gct cgt ctg atg cag gct ctg ccc gcg ggt ggg	2159
Leu Val Ser Ala Arg Ala Arg Leu Met Gln Ala Leu Pro Ala Gly Gly	
705 710 715	
gtg atg gtc gct gtc ccg gtc tcg gag gat gag gcc cgg gcc gtg ctg	2207
Val Met Val Ala Val Pro Val Ser Glu Asp Glu Ala Arg Ala Val Leu	
720 725 730 735	
ggg gag ggt gtg gag atc gcc gcg gtc aac ggc ccg tcg tcg gtg gtt	2255
Gly Glu Gly Val Glu Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val	
740 745 750	
ctc tcc ggt gat gag gcc gcc gtg ctg cag gcc gcg gag ggg ctg ggg	2303
Leu Ser Gly Asp Glu Ala Ala Val Leu Gln Ala Ala Glu Gly Leu Gly	
755 760 765	
aag tgg acg ccg ctg gcg acc agc cac gcg ttc cat tcc gcc cgt atg	2351
Lys Trp Thr Arg Leu Ala Thr Ser His Ala Phe His Ser Ala Arg Met	
770 775 780	
gaa ccc atg ctg gag gag ttc ccg gcg gtc gcc gaa ggc ctg acc tac	2399
Glu Pro Met Leu Glu Glu Phe Arg Ala Val Ala Glu Gly Leu Thr Tyr	
785 790 795	
ccg acg ccg cag gtc tcc atg gcc gtt ggt gat cag gtg acc acc gct	2447
Arg Thr Pro Gln Val Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala	
800 805 810 815	
gag tac tgg gtg ccg cag gtc ccg gac acg gtc ccg ttc ggc gag cag	2495
Glu Tyr Trp Val Arg Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln	
820 825 830	
gtg gcc tcg tac gag gac gcc gtg ttc gtc gag ctg ggt gcc gac ccg	2543
Val Ala Ser Tyr Glu Asp Ala Val Phe Val Glu Leu Gly Ala Asp Arg	
835 840 845	
tca ctg gcc cgc ctg gtc gac ggt gtc gcg atg ctg cac ggc gac cac	2591
Ser Leu Ala Arg Leu Val Asp Gly Val Ala Met Leu His Gly Asp His	
850 855 860	
gaa atc cag gcc gcg atc ggc gcc ctg gcc cac ctg tat gtc aac ggc	2639
Glu Ile Gln Ala Ala Ile Gly Ala Leu Ala His Leu Tyr Val Asn Gly	
865 870 875	
gtc acg gtc gac tgg ccc gcg ctc ctg ggc gat gct ccg gca aca ccg	2687
Val Thr Val Asp Trp Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg	
880 885 890 895	

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gtg ctg gac ctt ccg aca tac gcc ttc cag cac cag cgc tac tgg ctc	2735
Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu	
900 905 910	
gag tcg gca cgc ccg gcc gca tcc gac gcg ggc cac ccc gtg ctg ggc	2783
Glu Ser Ala Arg Pro Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly	
915 920 925	
tcc ggt atc gcc ctc gcc ggg tcg ccg ggc cgg gtg ttc acg ggt tcc	2831
Ser Gly Ile Ala Leu Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser	
930 935 940	
gtg ccg acc ggt gcg gac cgc gcg gtg ttc gtc gcc gag ctg gcg ctg	2879
Val Pro Thr Gly Ala Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu	
945 950 955	
gcc gcc gcg gac gcg gtc gac tgc gcc acg gtc gag cgg ctc gac atc	2927
Ala Ala Ala Asp Ala Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile	
960 965 970 975	
gcc tcc gtg ccc ggc cgg ccg ggc cat ggc cgg acg acc gta cag acc	2975
Ala Ser Val Pro Gly Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr	
980 985 990	
tgg gtc gac gag ccg gcg gac gac ggc cgg cgc cgg ttc acc gtg cac	3023
Trp Val Asp Glu Pro Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His	
995 1000 1005	
acc cgc acc ggc gac gcc ccg tgg acg ctg cac gcc gag ggg gtg ctg	3071
Thr Arg Thr Gly Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu	
1010 1015 1020	
cgc ccc cat ggc acg gcc ctg ccc gat gcg gcc gac gcc gag tgg ccc	3119
Arg Pro His Gly Thr Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro	
1025 1030 1035	
cca ccg ggc gcg gtg ccc gcg gac ggg ctg ccg ggt gtg tgg cgc cgg	3167
Pro Pro Gly Ala Val Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg	
1040 1045 1050 1055	
ggg gac cag gtc ttc gcc gag gcc gag gtg gac gga ccg gac ggt ttc	3215
Gly Asp Gln Val Phe Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe	
1060 1065 1070	
gtg gtg cac ccc gac ctg ctc gac gcg gtc ttc tcc gcg gtc ggc gac	3263
Val Val His Pro Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp	
1075 1080 1085	
gga agc cgc cag ccg gcc gga tgg cgc gac ctg acg gtg cac gcg tcg	3311
Gly Ser Arg Gln Pro Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser	
1090 1095 1100	
gac gcc acc gta ctg cgc gcc tgc ctc acc cgg cgc acc gac gga gcc	3359
Asp Ala Thr Val Leu Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala	
1105 1110 1115	

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atg gga ttc gcc gcc ttc gac ggc gcc ggc ctg ccg gta ctc acc gcg	3407
Met Gly Phe Ala Ala Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala	
1120 1125 1130 1135	
gag gcg gtg acg ctg cgg gag gtg gcg tca ccg tcc ggc tcc gag gag	3455
Glu Ala Val Thr Leu Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu	
1140 1145 1150	
tcg gac ggc ctg cac cgg ttg gag tgg ctc gcg gtc gcc gag gcg gtc	3503
Ser Asp Gly Leu His Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val	
1155 1160 1165	
tac gac ggt gac ctg ccc gag gga cat gtc ctg atc acc gcc gcc cac	3551
Tyr Asp Gly Asp Leu Pro Glu Gly His Val Leu Ile Thr Ala Ala His	
1170 1175 1180	
ccc gac gac ccc gag gac ata ccc acc cgc gcc cac acc cgc gcc acc	3599
Pro Asp Asp Pro Glu Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr	
1185 1190 1195	
cgc gtc ctg acc gcc ctg caa cac cac ctc acc acc acc gac cac acc	3647
Arg Val Leu Thr Ala Leu Gln His His Leu Thr Thr Thr Asp His Thr	
1200 1205 1210 1215	
ctc atc gtc cac acc acc acc gac ccc gcc ggc gcc acc gtc acc ggc	3695
Leu Ile Val His Thr Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly	
1220 1225 1230	
ctc acc cgc acc gcc cag aac gaa cac ccc cac cgc atc cgc ctc atc	3743
Leu Thr Arg Thr Ala Gln Asn Glu His Pro His Arg Ile Arg Leu Ile	
1235 1240 1245	
gaa acc gac cac ccc cac acc ccc ctc ccc ctg gcc caa ctc gcc acc	3791
Glu Thr Asp His Pro His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr	
1250 1255 1260	
ctc gac cac ccc cac ctc cgc ctc acc cac cac acc ctc cac cac ccc	3839
Leu Asp His Pro His Leu Arg Leu Thr His His Thr Leu His His Pro	
1265 1270 1275	
cac ctc acc ccc ctc cac acc acc acc cca ccc acc acc acc ccc ctc	3887
His Leu Thr Pro Leu His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu	
1280 1285 1290 1295	
aac ccc gaa cac gcc atc atc atc acc ggc ggc tcc ggc acc ctc gcc	3935
Asn Pro Glu His Ala Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala	
1300 1305 1310	
ggc atc ctc gcc cgc cac ctg aac cac ccc cac acc tac ctc ctc tcc	3983
Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr Leu Leu Ser	
1315 1320 1325	
cgc acc cca ccc ccc gac gcc acc ccc ggc acc cac ctc ccc tgc gac	4031
Arg Thr Pro Pro Pro Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp	
1330 1335 1340	

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gtc ggc gac ccc cac caa ctc gcc acc acc ctc acc cac atc ccc caa 4079
 Val Gly Asp Pro His Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln
 1345 1350 1355

ccc ctc acc gcc atc ttc cac acc gcc gcc acc ctc gac gac ggc atc 4127
 Pro Leu Thr Ala Ile Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile
 1360 1365 1370 1375

ctc cac gcc ctc acc ccc gac cgc ctc acc acc gtc ctc cac ccc aaa 4175
 Leu His Ala Leu Thr Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys
 1380 1385 1390

gcc aac gcc gcc tgg cac ctg cac cac ctc acc caa aac caa ccc ctc 4223
 Ala Asn Ala Ala Trp His Leu His His Leu Thr Gln Asn Gln Pro Leu
 1395 1400 1405

acc cac ttc gtc ctc tac tcc agc gcc gcc gcc gtc ctc ggc agc ccc 4271
 Thr His Phe Val Leu Tyr Ser Ser Ala Ala Val Leu Gly Ser Pro
 1410 1415 1420

gga caa gga aac tac gcc gcc gcc aac gcc ttc ctc gac gcc ctc gcc 4319
 Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala
 1425 1430 1435

acc cac cgc cac acc ctc ggc caa ccc gcc acc tcc atc gcc tgg ggc 4367
 Thr His Arg His Thr Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly
 1440 1445 1450 1455

atg tgg cac acc acc agc acc ctc acc gga caa ctc gac gac gcc gac 4415
 Met Trp His Thr Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp
 1460 1465 1470

cgg gac cgc atc cgc cgc ggc ggt ttc ctc ccg atc acg gac gac gag 4463
 Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu
 1475 1480 1485

ggc atggggatgc at 4478
 Gly

<210> 17

<211> 1488

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 17

Ile Trp Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr
 1 5 10 15

Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala
 20 25 30

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Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg
 35 40 45
 Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val
 50 55 60
 Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu
 65 70 75 80
 Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala
 85 90 95
 Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu
 100 105 110
 Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser
 115 120 125
 Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val
 130 135 140
 Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val
 145 150 155 160
 Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe
 165 170 175
 Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg
 180 185 190
 Val Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr
 195 200 205
 Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe
 210 215 220
 Ser Tyr Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr
 225 230 235 240
 Gly Ser Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly
 245 250 255
 Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu
 260 265 270
 Val Ala Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser
 275 280 285
 Leu Ala Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe
 290 295 300
 Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys
 305 310 315 320
 Ala Phe Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly
 325 330 335

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Val Leu Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr
 340 345 350
 Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser
 355 360 365
 Asn Gly Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg
 370 375 380
 Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val
 385 390 395 400
 Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln
 405 410 415
 Ala Val Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu
 420 425 430
 Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val
 435 440 445
 Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro
 450 455 460
 Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala
 465 470 475 480
 Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp
 485 490 495
 Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr Asn
 500 505 510
 Ala His Val Ile Leu Glu Ser Ala Pro Pro Thr Gln Pro Ala Asp Asn
 515 520 525
 Ala Val Ile Glu Arg Ala Pro Glu Trp Val Pro Leu Val Ile Ser Ala
 530 535 540
 Arg Thr Gln Ser Ala Leu Thr Glu His Glu Gly Arg Leu Arg Ala Tyr
 545 550 555 560
 Leu Ala Ala Ser Pro Gly Val Asp Met Arg Ala Val Ala Ser Thr Leu
 565 570 575
 Ala Met Thr Arg Ser Val Phe Glu His Arg Ala Val Leu Leu Gly Asp
 580 585 590
 Asp Thr Val Thr Gly Thr Ala Val Ser Asp Pro Arg Ala Val Phe Val
 595 600 605
 Phe Pro Gly Gln Gly Ser Gln Arg Ala Gly Met Gly Glu Glu Leu Ala
 610 615 620
 Ala Ala Phe Pro Val Phe Ala Arg Ile His Gln Gln Val Trp Asp Leu
 625 630 635 640

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Leu Asp Val Pro Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro
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PKS synthase fragment

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Ala	Ala	Val	Leu	Gly	His	Val	Gly	Gly	Glu	Asp	Ile	Pro	Ala	Thr	Ala	
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Phe	Asp	Phe	Pro	Thr	Pro	His	Val	Leu	Ala	Gly	Lys	Leu	Gly	Asp	Glu	
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Leu	Thr	Gly	Thr	Arg	Ala	Pro	Val	Val	Pro	Arg	Thr	Ala	Ala	Thr	Ala	
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Gly	Ala	His	Asp	Glu	Pro	Leu	Ala	Ile	Val	Gly	Met	Ala	Cys	Arg	Leu	
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Pro	Gly	Gly	Val	Ala	Ser	Pro	Glu	Glu	Leu	Trp	His	Leu	Val	Ala	Ser	
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Gly	Thr	Asp	Ala	Ile	Thr	Glu	Phe	Pro	Thr	Asp	Arg	Gly	Trp	Asp	Val	
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Val Ile Ser Ala Lys Thr Gln Pro Ala Leu Thr Glu His Glu Asp Arg	
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 His Thr Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp
 1490 1495 1500

cgc atc cgc cgc ggc ggt ttc ctc ccg atc acg gac gac gag ggc 4559
 Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
 1505 1510 1515

atgggggatgc at 4571

<210> 19

<211> 1517

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 19

09404660
 082701
 02280

Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr Ala Ala
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 Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala Ala Phe
 20 25 30
 Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg Asn Ala
 35 40 45
 Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val Phe Asp
 50 55 60
 Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu Leu Thr
 65 70 75 80
 Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala Gly Ala
 85 90 95
 His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu Pro Gly
 100 105 110
 Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser Gly Thr
 115 120 125
 Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val Asp Ala
 130 135 140
 Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val Arg His
 145 150 155 160
 Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly
 165 170 175
 Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Val Leu
 180 185 190
 Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp
 195 200 205
 Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe Ser Tyr
 210 215 220
 Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr Gly Ser
 225 230 235 240
 Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu
 245 250 255
 Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala
 260 265 270
 Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala
 275 280 285
 Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe Val Glu
 290 295 300

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Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe
 305 310 315 320
 Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly Val Leu
 325 330 335
 Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr Val Leu
 340 345 350
 Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly
 355 360 365
 Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg Gln Ala
 370 375 380
 Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val Glu Ala
 385 390 395 400
 His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Val
 405 410 415
 Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu Gly Ser
 420 425 430
 Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val Ala Gly
 435 440 445
 Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro Pro Thr
 450 455 460
 Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala Gly Ala
 465 470 475 480
 Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp Arg Pro
 485 490 495
 Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His
 500 505 510
 Val Ile Leu Glu Ser Ala Pro Pro Ala Gln Pro Ala Glu Glu Ala Gln
 515 520 525
 Pro Val Glu Thr Pro Val Val Ala Ser Asp Val Leu Pro Leu Val Ile
 530 535 540
 Ser Ala Lys Thr Gln Pro Ala Leu Thr Glu His Glu Asp Arg Leu Arg
 545 550 555 560
 Ala Tyr Leu Ala Ala Ser Pro Gly Ala Asp Ile Arg Ala Val Ala Ser
 565 570 575
 Thr Leu Ala Val Thr Arg Ser Val Phe Glu His Arg Ala Val Leu Leu
 580 585 590
 Gly Asp Asp Thr Val Thr Gly Thr Ala Val Thr Asp Pro Arg Ile Val
 595 600 605

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Phe Val Phe Pro Gly Gln Gly Trp Gln Trp Leu Gly Met Gly Ser Ala
 610 615 620
 Leu Arg Asp Ser Ser Val Phe Ala Glu Arg Met Ala Glu Cys Ala
 625 630 635 640
 Ala Ala Leu Arg Glu Phe Val Asp Trp Asp Leu Phe Thr Val Leu Asp
 645 650 655
 Asp Pro Ala Val Val Asp Arg Val Asp Val Val Gln Pro Ala Ser Trp
 660 665 670
 Ala Met Met Val Ser Leu Ala Ala Val Trp Gln Ala Ala Gly Val Arg
 675 680 685
 Pro Asp Ala Val Ile Gly His Ser Gln Gly Glu Ile Ala Ala Ala Cys
 690 695 700
 Val Ala Gly Ala Val Ser Leu Arg Asp Ala Ala Arg Ile Val Thr Leu
 705 710 715 720
 Arg Ser Gln Ala Ile Ala Arg Gly Leu Ala Gly Arg Gly Ala Met Ala
 725 730 735
 Ser Val Ala Leu Pro Ala Gln Asp Val Glu Leu Val Asp Gly Ala Trp
 740 745 750
 Ile Ala Ala His Asn Gly Pro Ala Ser Thr Val Ile Ala Gly Thr Pro
 755 760 765
 Glu Ala Val Asp His Val Leu Thr Ala His Glu Ala Gln Gly Val Arg
 770 775 780
 Val Arg Arg Ile Thr Val Asp Tyr Ala Ser His Thr Pro His Val Glu
 785 790 795 800
 Leu Ile Arg Asp Glu Leu Leu Asp Ile Thr Ser Asp Ser Ser Ser Gln
 805 810 815
 Thr Pro Leu Val Pro Trp Leu Ser Thr Val Asp Gly Thr Trp Val Asp
 820 825 830
 Ser Pro Leu Asp Gly Glu Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val
 835 840 845
 Gly Phe His Pro Ala Val Ser Gln Leu Gln Ala Gln Gly Asp Thr Val
 850 855 860
 Phe Val Glu Val Ser Ala Ser Pro Val Leu Leu Gln Ala Met Asp Asp
 865 870 875 880
 Asp Val Val Thr Val Ala Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr
 885 890 895
 Arg Met Leu Thr Ala Leu Ala Gln Ala Tyr Val His Gly Val Thr Val
 900 905 910

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Asp Trp Pro Ala Ile Leu Gly Thr Thr Thr Thr Arg Val Leu Asp Leu
 915 920 925
 Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Arg
 930 935 940
 Pro Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly Ile Ala
 945 950 955 960
 Leu Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro Thr Gly
 965 970 975
 Ala Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala Asp
 980 985 990
 Ala Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser Val Pro
 995 1000 1005
 Gly Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr Trp Val Asp Glu
 1010 1015 1020
 Pro Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Thr Gly
 025 1030 1035 1040
 Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro His Gly
 1045 1050 1055
 Thr Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala
 1060 1065 1070
 Val Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp Gln Val
 1075 1080 1085
 Phe Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe Val Val His Pro
 1090 1095 1100
 Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln
 1105 1110 1115 1120
 Pro Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala Thr Val
 1125 1130 1135
 Leu Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly Phe Ala
 1140 1145 1150
 Ala Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala Val Thr
 1155 1160 1165
 Leu Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu
 1170 1175 1180
 His Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp Gly Asp
 185 1190 1195 1200
 Leu Pro Glu Gly His Val Leu Ile Thr Ala Ala His Pro Asp Asp Pro
 1205 1210 1215

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Glu Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val Leu Thr
 1220 1225 1230
 Ala Leu Gln His His Leu Thr Thr Thr Asp His Thr Leu Ile Val His
 1235 1240 1245
 Thr Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr Arg Thr
 1250 1255 1260
 Ala Gln Asn Glu His Pro His Arg Ile Arg Leu Ile Glu Thr Asp His
 1265 1270 1275 1280
 Pro His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp His Pro
 1285 1290 1295
 His Leu Arg Leu Thr His His Thr Leu His His Pro His Leu Thr Pro
 1300 1305 1310
 Leu His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro Glu His
 1315 1320 1325
 Ala Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala
 1330 1335 1340
 Arg His Leu Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro
 1345 1350 1355 1360
 Pro Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly Asp Pro
 1365 1370 1375
 His Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu Thr Ala
 1380 1385 1390
 Ile Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His Ala Leu
 1395 1400 1405
 Thr Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn Ala Ala
 1410 1415 1420
 Trp His Leu His His Leu Thr Gln Asn Gln Pro Leu Thr His Phe Val
 1425 1430 1435 1440
 Leu Tyr Ser Ser Ala Ala Val Leu Gly Ser Pro Gly Gln Gly Asn
 1445 1450 1455
 Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His
 1460 1465 1470
 Thr Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp His Thr
 1475 1480 1485
 Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile
 1490 1495 1500
 Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
 1505 1510 1515

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<210> 20
 <211> 4466
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>

<221> CDS

<222> (9)...(4454)

<400> 20

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gcc gcc gtg ctc ggc cac gtg ggt ggc gag gac atc ccc gcg acg gcg 98
Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala
  15             20             25             30

gcg ttc aag gac ctc ggc atc gac tcg ctc acc gcg gtc cag ctg cgc 146
Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg
             35             40             45

aac gcc ctc acc gag gcg acc ggt gtg cgg ctg aac gcc acg gcg gtc 194
Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val
             50             55             60

ttc gac ttc ccg acc ccg cac gtg ctc gcc ggg aag ctc ggc gac gaa 242
Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu
        65             70             75

ctg acc ggc acc cgc gcg ccc gtc gtg ccc cgg acc gcg gcc acg gcc 290
Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala
      80             85             90

ggt gcg cac gac gag ccg ctg gcg atc gtg gga atg gcc tgc cgg ctg 338
Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu
      95             100             105             110

ccc ggc ggg gtc gcg tca ccc gag gag ctg tgg cac ctc gtg gca tcc 386
Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser
             115             120             125

ggc acc gac gcc atc acg gag ttc ccg acg gac cgc gcc tgg gac gtc 434
Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val
             130             135             140

gac gcg atc tac gac ccg gac ccc gac gcg atc ggc aag acc ttc gtc 482
Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val
             145             150             155

cgg cac ggt ggc ttc ctc acc ggc gcg aca ggc ttc gac gcg gcg ttc 530
Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe
      160             165             170

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ttc ggc atc agc ccg cgc gag gcc ctc gcg atg gac ccg cag cag cgg	578
Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg	
175 180 185 190	
gtg ctc ctg gag acg tcg tgg gag gcg ttc gaa agc gcc ggc atc acc	626
Val Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr	
195 200 205	
ccg gac tcg acc cgc ggc agc gac acc ggc gtg ttc gtc ggc gcc ttc	674
Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe	
210 215 220	
tcc tac ggt tac ggc acc ggt gcg gac acc gac ggc ttc ggc gcg acc	722
Ser Tyr Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr	
225 230 235	
ggc tcg cag acc agt gtg ctc tcc ggc cgg ctg tcg tac ttc tac ggt	770
Gly Ser Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly	
240 245 250	
ctg gag ggt ccg gcg gtc acg gtc gac acc gcg tgt tcg tcg tcg ctg	818
Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu	
255 260 265 270	
gtg gcg ctg cac cag gcc ggg cag tcg ctg cgc tcc ggc gaa tgc tcg	866
Val Ala Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser	
275 280 285	
ctc gcc ctg gtc ggc ggc gtc acg gtg atg gcg tct ccc ggc ggc ttc	914
Leu Ala Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe	
290 295 300	
gtg gag ttc tcc cgg cag cgc ggc ctc gcg ccg gac ggc cgg gcg aag	962
Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys	
305 310 315	
gcg ttc ggc gcg ggt gcg gac ggc acg agc ttc gcc gag ggt gcc ggt	1010
Ala Phe Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly	
320 325 330	
gtg ctg atc gtc gag agg ctc tcc gac gcc gaa cgc aac ggt cac acc	1058
Val Leu Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr	
335 340 345 350	
gtc ctg gcg gtc gtc cgt ggt tcg gcg gtc aac cag gat ggt gcc tcc	1106
Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser	
355 360 365	
aac ggg ctg tcg gcg ccg aac ggg ccg tcg cag gag cgg gtg atc cgg	1154
Asn Gly Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg	
370 375 380	
cag gcc ctg gcc aac gcc ggg ctc acc ccg gcg gac gtg gac gcc gtc	1202
Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val	
385 390 395	

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gag gcc cac ggc acc ggc acc agg ctg ggc gac ccc atc gag gca cag Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln 400 405 410	1250
gcg gta ctg gcc acc tac gga cag gag cgc gcc acc ccc ctg ctg ctg Ala Val Leu Ala Thr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu 415 420 425 430	1298
ggc tcg ctg aag tcc aac atc ggc cac gcc cag gcc gcg tcc ggc gtc Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val 435 440 445	1346
gcc gcc atc atc aag atg gtg cag gcc ctc cgg cac ggg gag ctg ccg Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro 450 455 460	1394
ccg acg ctg cac gcc gac gag ccg tcg ccg cac gtc gac tgg acg gcc Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala 465 470 475	1442
ggc gcc gtc gaa ctg ctg acg tcg gcc cgg ccg tgg ccc gag acc gac Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp 480 485 490	1490
cgg cca cgg cgt gcc gcc gtc tcc tcg ttc ggg gtg agc ggc acc aac Arg Pro Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn 495 500 505 510	1538
gcc cac gtc atc ctg gag gcc gga ccg gta acg gag acg ccc gcg gca Ala His Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala 515 520 525	1586
tcg cct tcc ggt gac ctt ccc ctg ctg gtg tcg gca cgc tca ccg gaa Ser Pro Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu 530 535 540	1634
gcg ctc gac gag cag atc cgc cga ctg cgc gcc tac ctg gac acc acc Ala Leu Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr 545 550 555	1682
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cac ttc gcc cac cgc gcc gtg ctg ctc ggt gac acc gtc atc acc aca His Phe Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr 575 580 585 590	1778
ccc ccc gcg gac cgg ccc gac gaa ctc gtc ttc gtc tac tcc ggc cag Pro Pro Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln 595 600 605	1826
ggc acc cag cat ccc gcg atg ggc gag cag cta gcc gcc gcg ttc ccc Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe Pro 610 615 620	1874

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gtc ttc gcg cgg atc cat cag cag gtg tgg gac ctg ctc gat gtg ccc	1922
Val Phe Ala Arg Ile His Gln Gln Val Trp Asp Leu Leu Asp Val Pro	
625 630 635	
gat ctg gag gtg aac gag acc ggt tac gcc cag ccg gcc ctg ttc gca	1970
Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala	
640 645 650	
atg cag gtg gct ctg ttc ggg ctg ctg gaa tcg tgg ggt gta cga ccg	2018
Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro	
655 660 665 670	
gac gcg gtg atc ggc cat tcg gtg ggt gag ctt gcg gct gcg tat gtg	2066
Asp Ala Val Ile Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val	
675 680 685	
tcc ggg gtg tgg tcg ttg gag gat gcc tgc act ttg gtg tcg gcg cgg	2114
Ser Gly Val Trp Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg	
690 695 700	
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Ala Arg Leu Met Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala Val	
705 710 715	
ccg gtc tcg gag gat gag gcc cgg gcc gtg ctg ggt gag ggt gtg gag	2210
Pro Val Ser Glu Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu	
720 725 730	
atc gcc gcg gtc aac ggc ccg tcg tcg gtg gtt ctc tcc ggt gat gag	2258
Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu	
735 740 745 750	
gcc gcc gtg ctg cag gcc gcg gag ggg ctg ggg aag tgg acg cgg ctg	2306
Ala Ala Val Leu Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu	
755 760 765	
gcg acc agc cac gcg ttc cat tcc gcc cgt atg gaa ccc atg ctg gag	2354
Ala Thr Ser His Ala Phe His Ser Ala Arg Met Glu Pro Met Leu Glu	
770 775 780	
gag ttc cgg gcg gtc gcc gaa ggc ctg acc tac cgg acg ccg cag gtc	2402
Glu Phe Arg Ala Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val	
785 790 795	
tcc atg gcc gtt ggt gat cag gtg acc acc gct gag tac tgg gtg cgg	2450
Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg	
800 805 810	
cag gtc cgg gac acg gtc cgg ttc ggc gag cag gtg gcc tcg tac gag	2498
Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu	
815 820 825 830	
gac gcc gtg ttc gtc gag ctg ggt gcc gac cgg tca ctg gcc cgc ctg	2546
Asp Ala Val Phe Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu	
835 840 845	

102230 91E04660

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ccc gcg ctc ctg ggc gat gct ccg gca aca cgg gtg ctg gac ctt ccg Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro 880 885 890	2690
aca tac gcc ttc cag cac cag cgc tac tgg ctc gag tcg gca cgc ccg Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Arg Pro 895 900 905 910	2738
gcc gca tcc gac gcg ggc cac ccc gtg ctg ggc tcc ggt atc gcc ctc Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly Ile Ala Leu 915 920 925	2786
gcc ggg tcg ccg ggc cgg gtg ttc acg ggt tcc gtg ccg acc ggt gcg Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro Thr Gly Ala 930 935 940	2834
gac cgc gcg gtg ttc gtc gcc gag ctg gcg ctg gcc gcc gcg gac gcg Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala 945 950 955	2882
gtc gac tgc gcc acg gtc gag cgg ctc gac atc gcc tcc gtg ccc ggc Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser Val Pro Gly 960 965 970	2930
cgg ccg ggc cat ggc cgg acg acc gta cag acc tgg gtc gac gag ccg Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr Trp Val Asp Glu Pro 975 980 985 990	2978
gcg gac gac ggc cgg cgc cgg ttc acc gtg cac acc cgc acc ggc gac Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Thr Gly Asp 995 1000 1005	3026
gcc ccg tgg acg ctg cac gcc gag ggg gtg ctg cgc ccc cat ggc acg Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro His Gly Thr 1010 1015 1020	3074
gcc ctg ccc gat gcg gcc gac gcc gag tgg ccc cca ccg ggc gcg gtg Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala Val 1025 1030 1035	3122
ccc gcg gac ggg ctg ccg ggt gtg tgg cgc cgg ggg gac cag gtc ttc Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp Gln Val Phe 1040 1045 1050	3170
gcc gag gcc gag gtg gac gga ccg gac ggt ttc gtg gtg cac ccc gac Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe Val Val His Pro Asp 1055 1060 1065 1070	3218

T02280" 9TE04660

ctg ctc gac gcg gtc ttc tcc gcg gtc ggc gac gga agc cgc cag ccg	3266
Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro	
1075 1080 1085	
gcc gga tgg cgc gac ctg acg gtg cac gcg tcg gac gcc acc gta ctg	3314
Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala Thr Val Leu	
1090 1095 1100	
cgc gcc tgc ctc acc cgg cgc acc gac gga gcc atg gga ttc gcc gcc	3362
Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly Phe Ala Ala	
1105 1110 1115	
ttc gac ggc gcc ggc ctg ccg gta ctc acc gcg gag gcg gtg acg ctg	3410
Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala Val Thr Leu	
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cgg gag gtg gcg tca ccg tcc ggc tcc gag gag tcg gac ggc ctg cac	3458
Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu His	
1135 1140 1145 1150	
cgg ttg gag tgg ctc gcg gtc gcc gag gcg gtc tac gac ggt gac ctg	3506
Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp Gly Asp Leu	
1155 1160 1165	
ccc gag gga cat gtc ctg atc acc gcc gcc cac ccc gac gac ccc gag	3554
Pro Glu Gly His Val Leu Ile Thr Ala Ala His Pro Asp Asp Pro Glu	
1170 1175 1180	
gac ata ccc acc cgc gcc cac acc cgc gcc acc cgc gtc ctg acc gcc	3602
Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val Leu Thr Ala	
1185 1190 1195	
ctg caa cac cac ctc acc acc acc gac cac acc ctc atc gtc cac acc	3650
Leu Gln His His Leu Thr Thr Thr Asp His Thr Leu Ile Val His Thr	
1200 1205 1210	
acc acc gac ccc gcc ggc gcc acc gtc acc ggc ctc acc cgc acc gcc	3698
Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr Arg Thr Ala	
1215 1220 1225 1230	
cag aac gaa cac ccc cac cgc atc cgc ctc atc gaa acc gac cac ccc	3746
Gln Asn Glu His Pro His Arg Ile Arg Leu Ile Glu Thr Asp His Pro	
1235 1240 1245	
cac acc ccc ctc ccc ctg gcc caa ctc gcc acc ctc gac cac ccc cac	3794
His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp His Pro His	
1250 1255 1260	
ctc cgc ctc acc cac cac acc ctc cac cac ccc cac ctc acc ccc ctc	3842
Leu Arg Leu Thr His His Thr Leu His His Pro His Leu Thr Pro Leu	
1265 1270 1275	
cac acc acc acc cca ccc acc acc acc ccc ctc aac ccc gaa cac gcc	3890
His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro Glu His Ala	
1280 1285 1290	

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atc atc atc acc ggc ggc tcc ggc acc ctc gcc ggc atc ctc gcc cgc 3938
 Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg
 1295 1300 1305 1310
 cac ctg aac cac ccc cac acc tac ctc ctc tcc cgc acc cca ccc ccc 3986
 His Leu Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro
 1315 1320 1325
 gac gcc acc ccc ggc acc cac ctc ccc tgc gac gtc ggc gac ccc cac 4034
 Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly Asp Pro His
 1330 1335 1340
 caa ctc gcc acc acc ctc acc cac atc ccc caa ccc ctc acc gcc atc 4082
 Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu Thr Ala Ile
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 ttc cac acc gcc gcc acc ctc gac gac ggc atc ctc cac gcc ctc acc 4130
 Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His Ala Leu Thr
 1360 1365 1370
 ccc gac cgc ctc acc acc gtc ctc cac ccc aaa gcc aac gcc gcc tgg 4178
 Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn Ala Ala Trp
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 cac ctg cac cac ctc acc caa aac caa ccc ctc acc cac ttc gtc ctc 4226
 His Leu His His Leu Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu
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 Tyr Ser Ser Ala Ala Ala Val Leu Gly Ser Pro Gly Gln Gly Asn Tyr
 1410 1415 1420
 gcc gcc gcc aac gcc ttc ctc gac gcc ctc gcc acc cac cgc cac acc 4322
 Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr
 1425 1430 1435
 ctc ggc caa ccc gcc acc tcc atc gcc tgg ggc atg tgg cac acc acc 4370
 Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp His Thr Thr
 1440 1445 1450
 agc acc ctc acc gga caa ctc gac gac gcc gac cgg gac cgc atc cgc 4418
 Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile Arg
 1455 1460 1465 1470
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<210> 21

<211> 1482

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

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<400> 21

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 20 25 30
 Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg Asn Ala
 35 40 45
 Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val Phe Asp
 50 55 60
 Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu Leu Thr
 65 70 75 80
 Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala Gly Ala
 85 90 95
 His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu Pro Gly
 100 105 110
 Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser Gly Thr
 115 120 125
 Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val Asp Ala
 130 135 140
 Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val Arg His
 145 150 155 160
 Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly
 165 170 175
 Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Val Leu
 180 185 190
 Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp
 195 200 205
 Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe Ser Tyr
 210 215 220
 Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr Gly Ser
 225 230 235 240
 Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu
 245 250 255
 Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala
 260 265 270
 Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala
 275 280 285
 Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe Val Glu
 290 295 300

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Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe
 305 310 315 320
 Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly Val Leu
 325 330 335
 Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr Val Leu
 340 345 350
 Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly
 355 360 365
 Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg Gln Ala
 370 375 380
 Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val Glu Ala
 385 390 395 400
 His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Val
 405 410 415
 Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu Gly Ser
 420 425 430
 Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val Ala Gly
 435 440 445
 Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro Pro Thr
 450 455 460
 Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala Gly Ala
 465 470 475 480
 Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp Arg Pro
 485 490 495
 Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His
 500 505 510
 Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala Ser Pro
 515 520 525
 Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu Ala Leu
 530 535 540
 Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr Pro Asp
 545 550 555 560
 Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr His Phe
 565 570 575
 Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr Pro Pro
 580 585 590
 Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln Gly Thr
 595 600 605

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Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe Pro Val Phe
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 Ala Arg Ile His Gln Gln Val Trp Asp Leu Leu Asp Val Pro Asp Leu
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 Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala Met Gln
 645 650 655
 Val Ala Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro Asp Ala
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 Val Ile Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val Ser Gly
 675 680 685
 Val Trp Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg Ala Arg
 690 695 700
 Leu Met Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala Val Pro Val
 705 710 715 720
 Ser Glu Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu Ile Ala
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 Ala Val Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu Ala Ala
 740 745 750
 Val Leu Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu Ala Thr
 755 760 765
 Ser His Ala Phe His Ser Ala Arg Met Glu Pro Met Leu Glu Glu Phe
 770 775 780
 Arg Ala Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val Ser Met
 785 790 795 800
 Ala Val Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg Gln Val
 805 810 815
 Arg Asp Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu Asp Ala
 820 825 830
 Val Phe Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu Val Asp
 835 840 845
 Gly Val Ala Met Leu His Gly Asp His Glu Ile Gln Ala Ala Ile Gly
 850 855 860
 Ala Leu Ala His Leu Tyr Val Asn Gly Val Thr Val Asp Trp Pro Ala
 865 870 875 880
 Leu Leu Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro Thr Tyr
 885 890 895
 Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Arg Pro Ala Ala
 900 905 910

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Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly Ile Ala Leu Ala Gly
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 Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro Thr Gly Ala Asp Arg
 930 935 940
 Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala Asp Ala Val Asp
 945 950 955 960
 Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser Val Pro Gly Arg Pro
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 Gly His Gly Arg Thr Thr Val Gln Thr Trp Val Asp Glu Pro Ala Asp
 980 985 990
 Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Thr Gly Asp Ala Pro
 995 1000 1005
 Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro His Gly Thr Ala Leu
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 Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala Val Pro Ala
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 Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp Gln Val Phe Ala Glu
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 Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Ala Gly
 1075 1080 1085
 Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala Thr Val Leu Arg Ala
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 Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly Phe Ala Ala Phe Asp
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 Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala Val Thr Leu Arg Glu
 1125 1130 1135
 Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu His Arg Leu
 1140 1145 1150
 Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp Gly Asp Leu Pro Glu
 1155 1160 1165
 Gly His Val Leu Ile Thr Ala Ala His Pro Asp Asp Pro Glu Asp Ile
 1170 1175 1180
 Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val Leu Thr Ala Leu Gln
 1185 1190 1195 1200
 His His Leu Thr Thr Thr Asp His Thr Leu Ile Val His Thr Thr Thr
 1205 1210 1215

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Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr Arg Thr Ala Gln Asn
 1220 1225 1230
 Glu His Pro His Arg Ile Arg Leu Ile Glu Thr Asp His Pro His Thr
 1235 1240 1245
 Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp His Pro His Leu Arg
 1250 1255 1260
 Leu Thr His His Thr Leu His His Pro His Leu Thr Pro Leu His Thr
 265 1270 1275 1280
 Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro Glu His Ala Ile Ile
 1285 1290 1295
 Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu
 1300 1305 1310
 Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Asp Ala
 1315 1320 1325
 Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly Asp Pro His Gln Leu
 1330 1335 1340
 Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu Thr Ala Ile Phe His
 345 1350 1355 1360
 Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His Ala Leu Thr Pro Asp
 1365 1370 1375
 Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn Ala Ala Trp His Leu
 1380 1385 1390
 His His Leu Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser
 1395 1400 1405
 Ser Ala Ala Ala Val Leu Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala
 1410 1415 1420
 Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Leu Gly
 425 1430 1435 1440
 Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp His Thr Thr Ser Thr
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 Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
 1475 1480

<210> 22

<211> 4547

<212> DNA

<213> Artificial Sequence

<220>

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 102280 91E04660

<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>

<221> CDS

<222> (9)..(4535)

<400> 22

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Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala
  15             20             25             30

gcg ttc aag gac ctc ggc atc gac tcg ctc acc gcg gtc cag ctg cgc 146
Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg
      35             40             45

aac gcc ctc acc gag gcg acc ggt gtg cgg ctg aac gcc acg gcg gtc 194
Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val
      50             55             60

ttc gac ttc ccg acc ccg cac gtg ctc gcc ggg aag ctc ggc gac gaa 242
Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu
      65             70             75

ctg acc ggc acc cgc gcg ccc gtc gtg ccc cgg acc gcg gcc acg gcc 290
Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala
      80             85             90

ggt gcg cac gac gag ccg ctg gcg atc gtg gga atg gcc tgc cgg ctg 338
Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu
      95             100            105            110

ccc ggc ggg gtc gcg tca ccc gag gag ctg tgg cac ctc gtg gca tcc 386
Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser
      115            120            125

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Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val
      130            135            140

gac gcg atc tac gac ccg gac ccc gac gcg atc ggc aag acc ttc gtc 482
Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val
      145            150            155

cgg cac ggt ggc ttc ctc acc ggc gcg aca ggc ttc gac gcg gcg ttc 530
Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe
      160            165            170

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ccg gac tcg acc cgc ggc agc gac acc ggc gtg ttc gtc ggc gcc ttc	674
Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe	
210 215 220	
tcc tac ggt tac ggc acc ggt gcg gac acc gac ggc ttc ggc gcg acc	722
Ser Tyr Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr	
225 230 235	
ggc tcg cag acc agt gtg ctc tcc ggc cgg ctg tcg tac ttc tac ggt	770
Gly Ser Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly	
240 245 250	
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Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu	
255 260 265 270	
gtg gcg ctg cac cag gcc ggg cag tcg ctg cgc tcc ggc gaa tgc tcg	866
Val Ala Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser	
275 280 285	
ctc gcc ctg gtc ggc ggc gtc acg gtg atg gcg tct ccc ggc ggc ttc	914
Leu Ala Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe	
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gtg gag ttc tcc cgg cag cgc ggc ctc gcg ccg gac ggc cgg gcg aag	962
Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys	
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Ala Phe Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly	
320 325 330	
gtg ctg atc gtc gag agg ctc tcc gac gcc gaa cgc aac ggt cac acc	1058
Val Leu Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr	
335 340 345 350	
gtc ctg gcg gtc gtc cgt ggt tcg gcg gtc aac cag gat ggt gcc tcc	1106
Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser	
355 360 365	
aac ggg ctg tcg gcg ccg aac ggg ccg tcg cag gag cgg gtg atc cgg	1154
Asn Gly Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg	
370 375 380	
cag gcc ctg gcc aac gcc ggg ctc acc ccg gcg gac gtg gac gcc gtc	1202
Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val	
385 390 395	
gag gcc cac ggc acc ggc acc agg ctg ggc gac ccc atc gag gca cag	1250
Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln	
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ggc tcg ctg aag tcc aac atc ggc cac gcc cag gcc gcg tcc ggc gtc	1346
Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val	
435 440 445	
gcc ggc atc atc aag atg gtg cag gcc ctc cgg cac ggg gag ctg ccg	1394
Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro	
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Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala	
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Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp	
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Arg Pro Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn	
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Pro Asp Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr	
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His Phe Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr	
575 580 585 590	
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Pro Pro Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln	
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Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Asp Ser Ser Val	
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Val Phe Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe	
625 630 635	

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cgg gtt gat gtg gtc cag ccc gct tcc tgg gcg atg atg gtt tcc ctg Arg Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu 655 660 665 670	2018
gcc gcg gtg tgg cag gcg gcc ggt gtg cgg ccg gat gcg gtg atc ggc Ala Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly 675 680 685	2066
cat tcg cag ggt gag atc gcc gca gct tgt gtg gcg ggt gcg gtg tca His Ser Gln Gly Glu Ile Ala Ala Cys Val Ala Gly Ala Val Ser 690 695 700	2114
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cag gat gtc gag ctg gtc gac ggg gcc tgg atc gcc gcc cac aac ggg Gln Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly 735 740 745 750	2258
ccc gcc tcc acc gtg atc gcg ggc acc ccg gaa gcg gtc gac cat gtc Pro Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val 755 760 765	2306
ctc acc gct cat gag gca caa ggg gtg cgg gtg cgg cgg atc acc gtc Leu Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val 770 775 780	2354
gac tat gcc tcg cac acc ccg cac gtc gag ctg atc cgc gac gaa cta Asp Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu 785 790 795	2402
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ctg tcg acc gtg gac ggc acc tgg gtc gac agc ccg ctg gac ggg gag Leu Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu 815 820 825 830	2498
tac tgg tac cgg aac ctg cgt gaa ccg gtc ggt ttc cac ccc gcc gtc Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val 835 840 845	2546
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Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu	
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gca cag gcc tat gtc cac ggc gtc acc gtc gac tgg ccc gcc atc ctc	2738
Ala Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu	
895 900 905 910	
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Gly Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln	
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cac cag cgg tac tgg ctc gag tcg gca cgc ccg gcc gca tcc gac gcg	2834
His Gln Arg Tyr Trp Leu Glu Ser Ala Arg Pro Ala Ala Ser Asp Ala	
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Gly His Pro Val Leu Gly Ser Gly Ile Ala Leu Ala Gly Ser Pro Gly	
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gtc gag cgg ctc gac atc gcc tcc gtg ccc ggc cgg ccg ggc cat ggc	3026
Val Glu Arg Leu Asp Ile Ala Ser Val Pro Gly Arg Pro Gly His Gly	
995 1000 1005	
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Pro Gly Val Trp Arg Arg Gly Asp Gln Val Phe Ala Glu Ala Glu Val	
1075 1080 1085	

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 1120 1125 1130

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 Arg Arg Thr Asp Gly Ala Met Gly Phe Ala Ala Phe Asp Gly Ala Gly
 1135 1140 1145 1150

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 Leu Pro Val Leu Thr Ala Glu Ala Val Thr Leu Arg Glu Val Ala Ser
 1155 1160 1165

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 1170 1175 1180

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 1185 1190 1195

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 Leu Ile Thr Ala Ala His Pro Asp Asp Pro Glu Asp Ile Pro Thr Arg
 1200 1205 1210

gcc cac acc cgc gcc acc cgc gtc ctg acc gcc ctg caa cac cac ctc 3698
 Ala His Thr Arg Ala Thr Arg Val Leu Thr Ala Leu Gln His His Leu
 1215 1220 1225 1230

acc acc acc gac cac acc ctc atc gtc cac acc acc acc gac ccc gcc 3746
 Thr Thr Thr Asp His Thr Leu Ile Val His Thr Thr Thr Asp Pro Ala
 1235 1240 1245

ggc gcc acc gtc acc ggc ctc acc cgc acc gcc cag aac gaa cac ccc 3794
 Gly Ala Thr Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro
 1250 1255 1260

cac cgc atc cgc ctc atc gaa acc gac cac ccc cac acc ccc ctc ccc 3842
 His Arg Ile Arg Leu Ile Glu Thr Asp His Pro His Thr Pro Leu Pro
 1265 1270 1275

ctg gcc caa ctc gcc acc ctc gac cac ccc cac ctc cgc ctc acc cac 3890
 Leu Ala Gln Leu Ala Thr Leu Asp His Pro His Leu Arg Leu Thr His
 1280 1285 1290

cac acc ctc cac cac ccc cac ctc acc ccc ctc cac acc acc acc cca 3938
 His Thr Leu His His Pro His Leu Thr Pro Leu His Thr Thr Thr Pro
 1295 1300 1305 1310

T02230-91204560

ccc acc acc acc ccc ctc aac ccc gaa cac gcc atc atc atc acc ggc 3986
 Pro Thr Thr Thr Pro Leu Asn Pro Glu His Ala Ile Ile Ile Thr Gly
 1315 1320 1325

ggc tcc ggc acc ctc gcc ggc atc ctc gcc cgc cac ctg aac cac ccc 4034
 Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro
 1330 1335 1340

cac acc tac ctc ctc tcc cgc acc cca ccc ccc gac gcc acc ccc ggc 4082
 His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Asp Ala Thr Pro Gly
 1345 1350 1355

acc cac ctc ccc tgc gac gtc ggc gac ccc cac caa ctc gcc acc acc 4130
 Thr His Leu Pro Cys Asp Val Gly Asp Pro His Gln Leu Ala Thr Thr
 1360 1365 1370

ctc acc cac atc ccc caa ccc ctc acc gcc atc ttc cac acc gcc gcc 4178
 Leu Thr His Ile Pro Gln Pro Leu Thr Ala Ile Phe His Thr Ala Ala
 1375 1380 1385 1390

acc ctc gac gac ggc atc ctc cac gcc ctc acc ccc gac cgc ctc acc 4226
 Thr Leu Asp Asp Gly Ile Leu His Ala Leu Thr Pro Asp Arg Leu Thr
 1395 1400 1405

acc gtc ctc cac ccc aaa gcc aac gcc gcc tgg cac ctg cac cac ctc 4274
 Thr Val Leu His Pro Lys Ala Asn Ala Ala Trp His Leu His His Leu
 1410 1415 1420

acc caa aac caa ccc ctc acc cac ttc gtc ctc tac tcc agc gcc gcc 4322
 Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala
 1425 1430 1435

gcc gtc ctc ggc agc ccc gga caa gga aac tac gcc gcc gcc aac gcc 4370
 Ala Val Leu Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala
 1440 1445 1450

ttc ctc gac gcc ctc gcc acc cac cgc cac acc ctc ggc caa ccc gcc 4418
 Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Leu Gly Gln Pro Ala
 1455 1460 1465 1470

acc tcc atc gcc tgg ggc atg tgg cac acc acc agc acc ctc acc gga 4466
 Thr Ser Ile Ala Trp Gly Met Trp His Thr Thr Ser Thr Leu Thr Gly
 1475 1480 1485

caa ctc gac gac gcc gac cgg gac cgc atc cgc cgc ggc ggt ttc ctc 4514
 Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu
 1490 1495 1500

ccg atc acg gac gac gag ggc atggggatgc at 4547
 Pro Ile Thr Asp Asp Glu Gly
 1505

<210> 23

<211> 1509

<212> PRT

<213> Artificial Sequence

09404660
 102280" 9TE04660

<220>

<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 23

Gln	Leu	Ala	Glu	Ala	Leu	Leu	Thr	Leu	Val	Arg	Glu	Ser	Thr	Ala	Ala	1	5	10	15
Val	Leu	Gly	His	Val	Gly	Gly	Glu	Asp	Ile	Pro	Ala	Thr	Ala	Ala	Phe	20	25	30	
Lys	Asp	Leu	Gly	Ile	Asp	Ser	Leu	Thr	Ala	Val	Gln	Leu	Arg	Asn	Ala	35	40	45	
Leu	Thr	Glu	Ala	Thr	Gly	Val	Arg	Leu	Asn	Ala	Thr	Ala	Val	Phe	Asp	50	55	60	
Phe	Pro	Thr	Pro	His	Val	Leu	Ala	Gly	Lys	Leu	Gly	Asp	Glu	Leu	Thr	65	70	75	80
Gly	Thr	Arg	Ala	Pro	Val	Val	Pro	Arg	Thr	Ala	Ala	Thr	Ala	Gly	Ala	85	90	95	
His	Asp	Glu	Pro	Leu	Ala	Ile	Val	Gly	Met	Ala	Cys	Arg	Leu	Pro	Gly	100	105	110	
Gly	Val	Ala	Ser	Pro	Glu	Glu	Leu	Trp	His	Leu	Val	Ala	Ser	Gly	Thr	115	120	125	
Asp	Ala	Ile	Thr	Glu	Phe	Pro	Thr	Asp	Arg	Gly	Trp	Asp	Val	Asp	Ala	130	135	140	
Ile	Tyr	Asp	Pro	Asp	Pro	Asp	Ala	Ile	Gly	Lys	Thr	Phe	Val	Arg	His	145	150	155	160
Gly	Gly	Phe	Leu	Thr	Gly	Ala	Thr	Gly	Phe	Asp	Ala	Ala	Phe	Phe	Gly	165	170	175	
Ile	Ser	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg	Val	Leu	180	185	190	
Leu	Glu	Thr	Ser	Trp	Glu	Ala	Phe	Glu	Ser	Ala	Gly	Ile	Thr	Pro	Asp	195	200	205	
Ser	Thr	Arg	Gly	Ser	Asp	Thr	Gly	Val	Phe	Val	Gly	Ala	Phe	Ser	Tyr	210	215	220	
Gly	Tyr	Gly	Thr	Gly	Ala	Asp	Thr	Asp	Gly	Phe	Gly	Ala	Thr	Gly	Ser	225	230	235	240
Gln	Thr	Ser	Val	Leu	Ser	Gly	Arg	Leu	Ser	Tyr	Phe	Tyr	Gly	Leu	Glu	245	250	255	
Gly	Pro	Ala	Val	Thr	Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	260	265	270	

0940316.082701

Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala
 275 280 285
 Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe Val Glu
 290 295 300
 Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe
 305 310 315 320
 Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly Val Leu
 325 330 335
 Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr Val Leu
 340 345 350
 Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly
 355 360 365
 Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg Gln Ala
 370 375 380
 Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val Glu Ala
 385 390 395 400
 His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Val
 405 410 415
 Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu Gly Ser
 420 425 430
 Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val Ala Gly
 435 440 445
 Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro Pro Thr
 450 455 460
 Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala Gly Ala
 465 470 475 480
 Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp Arg Pro
 485 490 495
 Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His
 500 505 510
 Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala Ser Pro
 515 520 525
 Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu Ala Leu
 530 535 540
 Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr Pro Asp
 545 550 555 560
 Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr His Phe
 565 570 575

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Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr Pro Pro
 580 585 590
 Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln Gly Thr
 595 600 605
 Gln His Pro Ala Met Gly Glu Gln Leu Ala Asp Ser Ser Val Val Phe
 610 615 620
 Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe Val Asp
 625 630 635 640
 Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val Asp Arg Val
 645 650 655
 Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu Ala Ala
 660 665 670
 Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly His Ser
 675 680 685
 Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser Leu Arg
 690 695 700
 Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala Arg Gly
 705 710 715 720
 Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala Gln Asp
 725 730 735
 Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly Pro Ala
 740 745 750
 Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val Leu Thr
 755 760 765
 Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val Asp Tyr
 770 775 780
 Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu Leu Asp
 785 790 795 800
 Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp Leu Ser
 805 810 815
 Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu Tyr Trp
 820 825 830
 Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val Ser Gln
 835 840 845
 Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala Ser Pro
 850 855 860
 Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala Thr Leu
 865 870 875 880

05940315-082701
 102280-91E04650

Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu Ala Gln
 885 890 895
 Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu Gly Thr
 900 905 910
 Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln His Gln
 915 920 925
 Arg Tyr Trp Leu Glu Ser Ala Arg Pro Ala Ala Ser Asp Ala Gly His
 930 935 940
 Pro Val Leu Gly Ser Gly Ile Ala Leu Ala Gly Ser Pro Gly Arg Val
 945 950 955 960
 Phe Thr Gly Ser Val Pro Thr Gly Ala Asp Arg Ala Val Phe Val Ala
 965 970 975
 Glu Leu Ala Leu Ala Ala Ala Asp Ala Val Asp Cys Ala Thr Val Glu
 980 985 990
 Arg Leu Asp Ile Ala Ser Val Pro Gly Arg Pro Gly His Gly Arg Thr
 995 1000 1005
 Thr Val Gln Thr Trp Val Asp Glu Pro Ala Asp Asp Gly Arg Arg Arg
 1010 1015 1020
 Phe Thr Val His Thr Arg Thr Gly Asp Ala Pro Trp Thr Leu His Ala
 1025 1030 1035 1040
 Glu Gly Val Leu Arg Pro His Gly Thr Ala Leu Pro Asp Ala Ala Asp
 1045 1050 1055
 Ala Glu Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu Pro Gly
 1060 1065 1070
 Val Trp Arg Arg Gly Asp Gln Val Phe Ala Glu Ala Glu Val Asp Gly
 1075 1080 1085
 Pro Asp Gly Phe Val Val His Pro Asp Leu Leu Asp Ala Val Phe Ser
 1090 1095 1100
 Ala Val Gly Asp Gly Ser Arg Gln Pro Ala Gly Trp Arg Asp Leu Thr
 1105 1110 1115 1120
 Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr Arg Arg
 1125 1130 1135
 Thr Asp Gly Ala Met Gly Phe Ala Ala Phe Asp Gly Ala Gly Leu Pro
 1140 1145 1150
 Val Leu Thr Ala Glu Ala Val Thr Leu Arg Glu Val Ala Ser Pro Ser
 1155 1160 1165
 Gly Ser Glu Glu Ser Asp Gly Leu His Arg Leu Glu Trp Leu Ala Val
 1170 1175 1180

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 102280-91E04560

Ala Glu Ala Val Tyr Asp Gly Asp Leu Pro Glu Gly His Val Leu Ile
 185 1190 1195 1200
 Thr Ala Ala His Pro Asp Asp Pro Glu Asp Ile Pro Thr Arg Ala His
 1205 1210 1215
 Thr Arg Ala Thr Arg Val Leu Thr Ala Leu Gln His His Leu Thr Thr
 1220 1225 1230
 Thr Asp His Thr Leu Ile Val His Thr Thr Thr Asp Pro Ala Gly Ala
 1235 1240 1245
 Thr Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro His Arg
 1250 1255 1260
 Ile Arg Leu Ile Glu Thr Asp His Pro His Thr Pro Leu Pro Leu Ala
 265 1270 1275 1280
 Gln Leu Ala Thr Leu Asp His Pro His Leu Arg Leu Thr His His Thr
 1285 1290 1295
 Leu His His Pro His Leu Thr Pro Leu His Thr Thr Thr Pro Pro Thr
 1300 1305 1310
 Thr Thr Pro Leu Asn Pro Glu His Ala Ile Ile Ile Thr Gly Gly Ser
 1315 1320 1325
 Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
 1330 1335 1340
 Tyr Leu Leu Ser Arg Thr Pro Pro Pro Asp Ala Thr Pro Gly Thr His
 345 1350 1355 1360
 Leu Pro Cys Asp Val Gly Asp Pro His Gln Leu Ala Thr Thr Leu Thr
 1365 1370 1375
 His Ile Pro Gln Pro Leu Thr Ala Ile Phe His Thr Ala Ala Thr Leu
 1380 1385 1390
 Asp Asp Gly Ile Leu His Ala Leu Thr Pro Asp Arg Leu Thr Thr Val
 1395 1400 1405
 Leu His Pro Lys Ala Asn Ala Ala Trp His Leu His His Leu Thr Gln
 1410 1415 1420
 Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Val
 425 1430 1435 1440
 Leu Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu
 1445 1450 1455
 Asp Ala Leu Ala Thr His Arg His Thr Leu Gly Gln Pro Ala Thr Ser
 1460 1465 1470
 Ile Ala Trp Gly Met Trp His Thr Thr Ser Thr Leu Thr Gly Gln Leu
 1475 1480 1485

0940316-082701

Asp Asp Ala Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
 1490 1495 1500

Thr Asp Asp Glu Gly
 505

<210> 24

<211> 4725

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>

<221> CDS

<222> (3)..(4724)

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Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val	
1 5 10 15	
gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg	95
Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly	
20 25 30	
ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc	143
Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu	
35 40 45	
gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc	191
Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro	
50 55 60	
tcg cgt tcg tcc tgg aac agc acc gcc acc gtg ctc ggc cac ctg ggc	239
Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly	
65 70 75	
gcc gaa gac atc ccg gcg acg acg acg ttc aag gaa ctc ggc atc gac	287
Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp	
80 85 90 95	
tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc	335
Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly	
100 105 110	
gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg	383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala	
115 120 125	
ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc	431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val	
130 135 140	

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gcg	gcc	cgg	acc	gcg	gcc	acc	gcg	gcc	gcg	cac	gac	gaa	ccg	ctg	gcg	479
Ala	Ala	Arg	Thr	Ala	Ala	Thr	Ala	Ala	Ala	His	Asp	Glu	Pro	Leu	Ala	
145			150			155										
atc	gtg	ggc	atg	gcc	tgc	cgt	ctg	ccg	ggc	ggg	gtc	gcg	tcg	cca	cag	527
Ile	Val	Gly	Met	Ala	Cys	Arg	Leu	Pro	Gly	Gly	Val	Ala	Ser	Pro	Gln	
160			165			170			175							
gag	ctg	tgg	cgt	ctc	gtc	gcg	tcc	ggc	acc	gac	gcc	atc	acg	gag	ttc	575
Glu	Leu	Trp	Arg	Leu	Val	Ala	Ser	Gly	Thr	Asp	Ala	Ile	Thr	Glu	Phe	
			180			185			190							
ccc	gcg	gac	cgc	ggc	tgg	gac	gtg	gac	gcg	ctc	tac	gac	ccg	gac	ccc	623
Pro	Ala	Asp	Arg	Gly	Trp	Asp	Val	Asp	Ala	Leu	Tyr	Asp	Pro	Asp	Pro	
			195			200			205							
gac	gcg	atc	ggc	aag	acc	ttc	gtc	cgg	cac	ggc	ggc	ttc	ctc	gac	ggc	671
Asp	Ala	Ile	Gly	Lys	Thr	Phe	Val	Arg	His	Gly	Gly	Phe	Leu	Asp	Gly	
210						215			220							
gcg	acc	ggc	ttc	gac	gcg	gcg	ttc	ttc	ggg	atc	agc	ccg	cgc	gag	gcc	719
Ala	Thr	Gly	Phe	Asp	Ala	Ala	Phe	Phe	Gly	Ile	Ser	Pro	Arg	Glu	Ala	
225						230			235							
ctg	gcc	atg	gac	ccg	cag	caa	cgg	gtg	ctc	ctg	gag	acg	tcc	tgg	gag	767
Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg	Val	Leu	Leu	Glu	Thr	Ser	Trp	Glu	
240			245			250			255							
gcg	ttc	gaa	agc	gcg	ggc	atc	acc	ccg	gac	gcg	gcg	cgg	ggc	agc	gac	815
Ala	Phe	Glu	Ser	Ala	Gly	Ile	Thr	Pro	Asp	Ala	Ala	Arg	Gly	Ser	Asp	
			260			265			270							
acc	ggc	gtg	ttc	atc	ggc	gcg	ttc	tcc	tac	ggg	tac	ggc	acg	ggc	gcg	863
Thr	Gly	Val	Phe	Ile	Gly	Ala	Phe	Ser	Tyr	Gly	Tyr	Gly	Thr	Gly	Ala	
			275			280			285							
gat	acc	aac	ggc	ttc	ggc	gcg	aca	ggg	tgc	cag	acc	agc	gtg	ctc	tcc	911
Asp	Thr	Asn	Gly	Phe	Gly	Ala	Thr	Gly	Ser	Gln	Thr	Ser	Val	Leu	Ser	
290						295			300							
ggc	cgc	ctc	tgc	tac	ttc	tac	ggt	ctg	gag	ggc	cct	tgc	gtc	acg	gtc	959
Gly	Arg	Leu	Ser	Tyr	Phe	Tyr	Gly	Leu	Glu	Gly	Pro	Ser	Val	Thr	Val	
305			310			315										
gac	acc	gcc	tgc	tgc	tgc	tca	ctg	gtc	gcc	ctg	cac	cag	gca	ggg	cag	1007
Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Gln	Ala	Gly	Gln	
320			325			330			335							
tcc	ctg	cgc	tgc	ggc	gaa	tgc	tgc	ctc	gcc	ctg	gtc	ggc	ggc	gtc	acg	1055
Ser	Leu	Arg	Ser	Gly	Glu	Cys	Ser	Leu	Ala	Leu	Val	Gly	Gly	Val	Thr	
			340			345			350							
gtg	atg	gcg	tgc	ccc	ggc	gga	ttc	gtc	gag	ttc	tcc	cgg	cag	cgc	ggg	1103
Val	Met	Ala	Ser	Pro	Gly	Gly	Phe	Val	Glu	Phe	Ser	Arg	Gln	Arg	Gly	
355			360			365										

ctc	gcg	cgc	gac	ggg	cgg	gcg	aag	gcg	ttc	ggc	gcg	ggc	gcg	gac	ggt	1151
Leu	Ala	Pro	Asp	Gly	Arg	Ala	Lys	Ala	Phe	Gly	Ala	Gly	Ala	Asp	Gly	
		370					375					380				
acg	agc	ttc	gcc	gag	ggc	gcc	ggt	gcc	ctg	gtg	gtc	gag	cgg	ctc	tcc	1199
Thr	Ser	Phe	Ala	Glu	Gly	Ala	Gly	Ala	Leu	Val	Val	Glu	Arg	Leu	Ser	
		385					390				395					
gac	gcg	gag	cgc	cac	ggc	cac	acc	gtc	ctc	gcc	ctc	gta	cgc	ggc	tcc	1247
Asp	Ala	Glu	Arg	His	Gly	His	Thr	Val	Leu	Ala	Leu	Val	Arg	Gly	Ser	
400					405					410					415	
gcg	gct	aac	tcc	gac	ggc	gcg	tcg	aac	ggt	ctg	tcg	gcg	ccg	aac	ggc	1295
Ala	Ala	Asn	Ser	Asp	Gly	Ala	Ser	Asn	Gly	Leu	Ser	Ala	Pro	Asn	Gly	
				420					425					430		
ccc	tcc	cag	gaa	cgc	gtc	atc	cac	cag	gcc	ctc	gcg	aac	gcg	aaa	ctc	1343
Pro	Ser	Gln	Glu	Arg	Val	Ile	His	Gln	Ala	Leu	Ala	Asn	Ala	Lys	Leu	
			435					440					445			
acc	ccc	gcc	gat	gtc	gac	gcg	gtc	gag	gcg	cac	ggc	acc	ggc	acc	cgc	1391
Thr	Pro	Ala	Asp	Val	Asp	Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Arg	
		450					455					460				
ctc	ggc	gac	ccc	atc	gag	gcg	cag	gcg	ctg	ctc	gcg	acg	tac	gga	cag	1439
Leu	Gly	Asp	Pro	Ile	Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	
	465					470					475					
gac	cgg	gcg	acg	ccc	ctg	ctg	ctc	ggc	tcg	ctg	aag	tcg	aac	atc	ggg	1487
Asp	Arg	Ala	Thr	Pro	Leu	Leu	Leu	Gly	Ser	Leu	Lys	Ser	Asn	Ile	Gly	
480					485					490					495	
cac	gcc	cag	gcc	gcg	tca	ggg	gtc	gcc	ggg	atc	atc	aag	atg	gtg	cag	1535
His	Ala	Gln	Ala	Ala	Ser	Gly	Val	Ala	Gly	Ile	Ile	Lys	Met	Val	Gln	
				500					505					510		
gcc	atc	cgg	cac	ggg	gaa	ctg	ccg	ccg	aca	ctg	cac	gcg	gac	gag	ccg	1583
Ala	Ile	Arg	His	Gly	Glu	Leu	Pro	Pro	Thr	Leu	His	Ala	Asp	Glu	Pro	
			515					520					525			
tcg	ccg	cac	gtc	gac	tgg	acg	gcc	ggt	gcc	gtc	gag	ctc	ctg	acg	tcg	1631
Ser	Pro	His	Val	Asp	Trp	Thr	Ala	Gly	Ala	Val	Glu	Leu	Leu	Thr	Ser	
		530					535					540				
gcc	cgg	ccg	tgg	ccg	ggg	acc	ggt	cgc	ccg	cgc	cgc	gct	gcc	gtc	tcg	1679
Ala	Arg	Pro	Trp	Pro	Gly	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Ala	Val	Ser	
		545				550					555					
tcg	ttc	ggc	gtg	agc	ggc	acg	aac	gcc	cac	atc	atc	ctt	gag	gca	gga	1727
Ser	Phe	Gly	Val	Ser	Gly	Thr	Asn	Ala	His	Ile	Ile	Leu	Glu	Ala	Gly	
560																

gtc gaa gta gga ccg gtc gag gct gga ccg ctc ccc gcg gcg ccg ccg	1823
Val Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro	
595 600 605	
tca gca ccg ggc gaa gac ctt ccg ctg ctc gtg tcg gcg cgt tcc ccg	1871
Ser Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro	
610 615 620	
gag gca ctc gac gag cag atc ggg cgc ctg cgc gcc tat ctc gac acc	1919
Glu Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr	
625 630 635	
ggc ccg ggc gtc gac ccg gcg gcc gtg gcg cag aca ctg gcc ccg cgt	1967
Gly Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg	
640 645 650 655	
acg cac ttc acc cac ccg gcc gta ctg ctc ggg gac acc gtc atc ggc	2015
Thr His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly	
660 665 670	
gct ccc ccc gcg gac cag gcc gac gaa ctc gtc ttc gtc tac tcc ggt	2063
Ala Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly	
675 680 685	
cag ggc acc cag cat ccc gcg atg ggc gag caa ctc gcg gcc gcg ttc	2111
Gln Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Phe	
690 695 700	
ccc gtg ttc gcc gat gcc tgg cac gac gcg ctc cga ccg ctc gac gac	2159
Pro Val Phe Ala Asp Ala Trp His Asp Ala Leu Arg Arg Leu Asp Asp	
705 710 715	
ccc gac ccg cac gac ccc aca ccg agc cag cac acg ctc ttc gcc cac	2207
Pro Asp Pro His Asp Pro Thr Arg Ser Gln His Thr Leu Phe Ala His	
720 725 730 735	
cag gcg gcg ttc acc gcc ctc ctg agg tcc tgg gac atc acg ccg cac	2255
Gln Ala Ala Phe Thr Ala Leu Leu Arg Ser Trp Asp Ile Thr Pro His	
740 745 750	
gcc gtc atc ggc cac tcg ctc ggc gag atc acc gcc gcg tac gcc gcc	2303
Ala Val Ile Gly His Ser Leu Gly Glu Ile Thr Ala Ala Tyr Ala Ala	
755 760 765	
ggg atc ctg tcg ctc gac gac gcc tgc acc ctg atc acc acg cgt gcc	2351
Gly Ile Leu Ser Leu Asp Asp Ala Cys Thr Leu Ile Thr Thr Arg Ala	
770 775 780	
cgc ctc atg cac acg ctt ccg ccg ccc ggc gcc atg gtc acc gtg ctg	2399
Arg Leu Met His Thr Leu Pro Pro Pro Gly Ala Met Val Thr Val Leu	
785 790 795	
acc agc gag gag gag gcc cgt cag gcg ctg ccg ccg ggc gtg gag atc	2447
Thr Ser Glu Glu Glu Ala Arg Gln Ala Leu Arg Pro Gly Val Glu Ile	
800 805 810 815	

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gcc gcg gtc ttc ggc ccg cac tcc gtc gtg ctc tcg ggc gac gag gac 2495
 Ala Ala Val Phe Gly Pro His Ser Val Val Leu Ser Gly Asp Glu Asp
 820 825 830

gcc gtg ctc gac gtc gca cag cgg ctc ggc atc cac cac cgt ctg ccc 2543
 Ala Val Leu Asp Val Ala Gln Arg Leu Gly Ile His His Arg Leu Pro
 835 840 845

gcg ccg cac gcg ggc cac tcc gcg cac atg gaa ccc gtg gcc gcc gag 2591
 Ala Pro His Ala Gly His Ser Ala His Met Glu Pro Val Ala Ala Glu
 850 855 860

ctg ctc gcc acc act cgc gag ctc cgt tac gac cgg ccc cac acc gcc 2639
 Leu Leu Ala Thr Thr Arg Glu Leu Arg Tyr Asp Arg Pro His Thr Ala
 865 870 875

atc ccg aac gac ccc acc acc gcc gag tac tgg gcc gag cag gtc cgc 2687
 Ile Pro Asn Asp Pro Thr Thr Ala Glu Tyr Trp Ala Glu Gln Val Arg
 880 885 890 895

aac ccc gtg ctg ttc cac gcc cac acc cag cgg tac ccc gac gcc gtg 2735
 Asn Pro Val Leu Phe His Ala His Thr Gln Arg Tyr Pro Asp Ala Val
 900 905 910

ttc gtc gag atc ggc ccc ggc cag gac ctc tca ccg ctg gtc gac gcc 2783
 Phe Val Glu Ile Gly Pro Gly Gln Asp Leu Ser Pro Leu Val Asp Gly
 915 920 925

atc gcc ctg cag aac ggc acg gcg gac gag gtg cac gcg ctg cac acc 2831
 Ile Ala Leu Gln Asn Gly Thr Ala Asp Glu Val His Ala Leu His Thr
 930 935 940

gcg ctc gcc cgc ctc ttc aca cgc ggc gcc acg ctc gac tgg tcc cgc 2879
 Ala Leu Ala Arg Leu Phe Thr Arg Gly Ala Thr Leu Asp Trp Ser Arg
 945 950 955

atc ctc ggc ggt gct tcg cgg cac gac cct gac gtc ccc tcg tac gcg 2927
 Ile Leu Gly Gly Ala Ser Arg His Asp Pro Asp Val Pro Ser Tyr Ala
 960 965 970 975

ttc cag cgg cgt ccc tac tgg atc gag tcg gct ccc ccg gcc acg gcc 2975
 Phe Gln Arg Arg Pro Tyr Trp Ile Glu Ser Ala Pro Pro Ala Thr Ala
 980 985 990

gac tcg ggc cac ccc gtc ctc ggc acc gga gtc gcc gtc gcc ggg tcg 3023
 Asp Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser
 995 1000 1005

ccg ggc cgg gtg ttc acg ggt ccc gtg ccc gcc ggt gcg gac cgc gcg 3071
 Pro Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala
 1010 1015 1020

gtg ttc atc gcc gaa ctg gcg ctc gcc gcc gcc gac gcc acc gac tgc 3119
 Val Phe Ile Ala Glu Leu Ala Leu Ala Ala Asp Ala Thr Asp Cys
 1025 1030 1035

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gcc acg gtc gaa cag ctc gac gtc acc tcc gtg ccc ggc gga tcc gcc 3167
 Ala Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala
 1040 1045 1050 1055

cgc ggc agg gcc acc gcg cag acc tgg gtc gat gaa ccc gcc gcc gac 3215
 Arg Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp
 1060 1065 1070

ggg cgg cgc cgc ttc acc gtc cac acc cgc gtc ggc gac gcc ccg tgg 3263
 Gly Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp
 1075 1080 1085

acg ctg cac gcc gag ggg gtt ctc cgc ccc ggc cgc gtg ccc cag ccc 3311
 Thr Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro
 1090 1095 1100

gaa gcc gtc gac acc gcc tgg ccc ccg ccg ggc gcg gtg ccc gcg gac 3359
 Glu Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp
 1105 1110 1115

ggg ctg ccc ggg gcg tgg cga cgc gcg gac cag gtc ttc gtc gaa gcc 3407
 Gly Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala
 1120 1125 1130 1135

gaa gtc gac agc cct gac ggc ttc gtg gca cac ccc gac ctg ctc gac 3455
 Glu Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp
 1140 1145 1150

gcg gtc ttc tcc gcg gtc ggc gac ggg agc cgc cag ccg acc gga tgg 3503
 Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp
 1155 1160 1165

cgc gac ctc gcg gtg cac gcg tcg gac gcc acc gtg ctg cgc gcc tgc 3551
 Arg Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys
 1170 1175 1180

ctc acc cgc cgc gac agt ggt gtc gtg gag ctc gcc gcc ttc gac ggt 3599
 Leu Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly
 1185 1190 1195

gcc gga atg ccg gtg ctc acc gcg gag tcg gtg acg ctg ggc gag gtc 3647
 Ala Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val
 1200 1205 1210 1215

gcg tcg gca ggc gga tcc gac gag tcg gac ggt ctg ctt cgg ctt gag 3695
 Ala Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu
 1220 1225 1230

tgg ttg ccg gtg gcg gag gcc cac tac gac ggt gcc gac gag ctg ccc 3743
 Trp Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro
 1235 1240 1245

gag ggc tac acc ctc atc acc gcc aca cac ccc gac gac ccc gac gac 3791
 Glu Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp
 1250 1255 1260

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ccc acc aac ccc cac aac aca ccc aca cgc acc cac aca caa acc aca 3839
 Pro Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr
 1265 1270 1275

cgc gtc ctc acc gcc ctc caa cac cac ctc atc acc acc aac cac acc 3887
 Arg Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr
 1280 1285 1290 1295

ctc atc gtc cac acc acc acc gac ccc cca ggc gcc gcc gtc acc ggc 3935
 Leu Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly
 1300 1305 1310

ctc acc cgc acc gca caa aac gaa cac ccc ggc cgc atc cac ctc atc 3983
 Leu Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile
 1315 1320 1325

gaa acc cac cac ccc cac acc cca ctc ccc ctc acc caa ctc acc acc 4031
 Glu Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr
 1330 1335 1340

ctc cac caa ccc cac cta cgc ctc acc aac aac acc ctc cac acc ccc 4079
 Leu His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro
 1345 1350 1355

cac ctc acc ccc atc acc acc cac cac aac acc acc aca acc acc ccc 4127
 His Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro
 1360 1365 1370 1375

aac acc cca ccc ctc aac ccc aac cac gcc atc ctc atc acc ggc ggc 4175
 Asn Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly
 1380 1385 1390

tcc ggc acc ctc gcc ggc atc ctc gcc cgc cac ctc aac cac ccc cac 4223
 Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His
 1395 1400 1405

acc tac ctc ctc tcc cgc aca cca cca ccc ccc acc aca ccc ggc acc 4271
 Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr
 1410 1415 1420

cac atc ccc tgc gac ctc acc gac ccc acc caa atc acc caa gcc ctc 4319
 His Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu
 1425 1430 1435

acc cac ata cca caa ccc ctc acc ggc atc ttc cac acc gcc gcc acc 4367
 Thr His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr
 1440 1445 1450 1455

ctc gac gac gcc acc ctc acc aac ctc acc ccc caa cac ctc acc acc 4415
 Leu Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr
 1460 1465 1470

acc ctc caa ccc aaa gcc gac gcc gcc tgg cac ctc cac cac cac acc 4463
 Thr Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr
 1475 1480 1485

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caa aac caa ccc ctc acc cac ttc gtc ctc tac tcc agc gcc gcc gcc 4511
Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala
1490 1495 1500

acc ctc ggc agc ccc ggc caa gcc aac tac gcc gcc gcc aac gcc ttc 4559
Thr Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe
1505 1510 1515

ctc gac gcc ctc gcc acc cac cgc cac acc caa gga caa ccc gcc acc 4607
Leu Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr
1520 1525 1530 1535

acc atc gcc tgg ggc atg tgg cac acc acc acc aca ctc acc agc caa 4655
Thr Ile Ala Trp Gly Met Trp His Thr Thr Thr Leu Thr Ser Gln
1540 1545 1550

ctc acc gac agc gac cgc gac cgc atc cgc cgc ggc ggc ttc ctg ccg 4703
Leu Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro
1555 1560 1565

atc tcg gac gac gag ggc atg c 4725
Ile Ser Asp Asp Glu Gly Met
1570

<210> 25

<211> 1574

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 25

Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
1 5 10 15

Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
20 25 30

Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
35 40 45

Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
50 55 60

Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
65 70 75 80

Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
85 90 95

Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
100 105 110

10/280-91E04660

Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
 115 120 125
 Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
 130 135 140
 Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
 145 150 155 160
 Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
 165 170 175
 Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
 180 185 190
 Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
 195 200 205
 Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
 210 215 220
 Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
 225 230 235 240
 Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
 245 250 255
 Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
 260 265 270
 Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
 275 280 285
 Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
 290 295 300
 Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
 305 310 315 320
 Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
 325 330 335
 Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
 340 345 350
 Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
 355 360 365
 Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
 370 375 380
 Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
 385 390 395 400
 Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
 405 410 415

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Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
 420 425 430
 Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
 435 440 445
 Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
 450 455 460
 Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
 465 470 475 480
 Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
 485 490 495
 Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
 500 505 510
 Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
 515 520 525
 Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
 530 535 540
 Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser Ser
 545 550 555 560
 Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly Pro
 565 570 575
 Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro Val
 580 585 590
 Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro Ser
 595 600 605
 Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
 610 615 620
 Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr Gly
 625 630 635 640
 Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
 645 650 655
 His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly Ala
 660 665 670
 Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
 675 680 685
 Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe Pro
 690 695 700
 Val Phe Ala Asp Ala Trp His Asp Ala Leu Arg Arg Leu Asp Asp Pro
 705 710 715 720

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Asp Pro His Asp Pro Thr Arg Ser Gln His Thr Leu Phe Ala His Gln
 725 730 735
 Ala Ala Phe Thr Ala Leu Leu Arg Ser Trp Asp Ile Thr Pro His Ala
 740 745 750
 Val Ile Gly His Ser Leu Gly Glu Ile Thr Ala Ala Tyr Ala Ala Gly
 755 760 765
 Ile Leu Ser Leu Asp Asp Ala Cys Thr Leu Ile Thr Thr Arg Ala Arg
 770 775 780
 Leu Met His Thr Leu Pro Pro Gly Ala Met Val Thr Val Leu Thr
 785 790 795 800
 Ser Glu Glu Glu Ala Arg Gln Ala Leu Arg Pro Gly Val Glu Ile Ala
 805 810 815
 Ala Val Phe Gly Pro His Ser Val Val Leu Ser Gly Asp Glu Asp Ala
 820 825 830
 Val Leu Asp Val Ala Gln Arg Leu Gly Ile His His Arg Leu Pro Ala
 835 840 845
 Pro His Ala Gly His Ser Ala His Met Glu Pro Val Ala Ala Glu Leu
 850 855 860
 Leu Ala Thr Thr Arg Glu Leu Arg Tyr Asp Arg Pro His Thr Ala Ile
 865 870 875 880
 Pro Asn Asp Pro Thr Thr Ala Glu Tyr Trp Ala Glu Gln Val Arg Asn
 885 890 895
 Pro Val Leu Phe His Ala His Thr Gln Arg Tyr Pro Asp Ala Val Phe
 900 905 910
 Val Glu Ile Gly Pro Gly Gln Asp Leu Ser Pro Leu Val Asp Gly Ile
 915 920 925
 Ala Leu Gln Asn Gly Thr Ala Asp Glu Val His Ala Leu His Thr Ala
 930 935 940
 Leu Ala Arg Leu Phe Thr Arg Gly Ala Thr Leu Asp Trp Ser Arg Ile
 945 950 955 960
 Leu Gly Gly Ala Ser Arg His Asp Pro Asp Val Pro Ser Tyr Ala Phe
 965 970 975
 Gln Arg Arg Pro Tyr Trp Ile Glu Ser Ala Pro Pro Ala Thr Ala Asp
 980 985 990
 Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro
 995 1000 1005
 Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val
 1010 1015 1020

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Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala
 025 1030 1035 104
 Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg
 1045 1050 1055
 Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly
 1060 1065 1070
 Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr
 1075 1080 1085
 Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu
 1090 1095 1100
 Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly
 105 1110 1115 112
 Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu
 1125 1130 1135
 Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala
 1140 1145 1150
 Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg
 1155 1160 1165
 Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu
 1170 1175 1180
 Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala
 185 1190 1195 120
 Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala
 1205 1210 1215
 Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp
 1220 1225 1230
 Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu
 1235 1240 1245
 Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro
 1250 1255 1260
 Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg
 265 1270 1275 128
 Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu
 1285 1290 1295
 Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu
 1300 1305 1310
 Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu
 1315 1320 1325

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 102280-9TE04660

Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu
 1330 1335 1340
 His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His
 345 1350 1355 136
 Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn
 1365 1370 1375
 Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser
 1380 1385 1390
 Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
 1395 1400 1405
 Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His
 1410 1415 1420
 Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr
 425 1430 1435 144
 His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu
 1445 1450 1455
 Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr
 1460 1465 1470
 Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln
 1475 1480 1485
 Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr
 1490 1495 1500
 Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu
 505 1510 1515 152
 Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr
 1525 1530 1535
 Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu
 1540 1545 1550
 Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
 1555 1560 1565
 Ser Asp Asp Glu Gly Met
 1570

<210> 26

<211> 4674

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

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<220>

<221> CDS

<222> (3)..(4673)

<400> 26

gc atg cgg ctg tac gag gcg gca cgg cgc acc gga agt ccc gtg gtg	47
Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val	
1 5 10 15	
gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg	95
Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly	
20 25 30	
ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc	143
Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu	
35 40 45	
gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc	191
Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro	
50 55 60	
tcg cgt tcg tcc tgg aac agc acc gcc acc gtg ctc ggc cac ctg ggc	239
Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly	
65 70 75	
gcc gaa gac atc ccg gcg acg acg acg ttc aag gaa ctc ggc atc gac	287
Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp	
80 85 90 95	
tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc	335
Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly	
100 105 110	
gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg	383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala	
115 120 125	
ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc	431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val	
130 135 140	
gcg gcc cgg acc gcg gcc acc gcg gcc gcg cac gac gaa ccg ctg gcg	479
Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala	
145 150 155	
atc gtg ggc atg gcc tgc cgt ctg ccg ggc ggg gtc gcg tcg cca cag	527
Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln	
160 165 170 175	
gag ctg tgg cgt ctc gtc gcg tcc ggc acc gac gcc atc acg gag ttc	575
Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe	
180 185 190	
ccc gcg gac cgc ggc tgg gac gtg gac gcg ctc tac gac ccg gac ccc	623
Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro	
195 200 205	
gac gcg atc ggc aag acc ttc gtc cgg cac ggc ggc ttc ctc gac ggt	671

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Asp	Ala	Ile	Gly	Lys	Thr	Phe	Val	Arg	His	Gly	Gly	Phe	Leu	Asp	Gly	
		210					215					220				
gcg	acc	ggc	ttc	gac	gcg	gcg	ttc	ttc	ggg	atc	agc	ccg	cgc	gag	gcc	719
Ala	Thr	Gly	Phe	Asp	Ala	Ala	Phe	Phe	Gly	Ile	Ser	Pro	Arg	Glu	Ala	
	225					230					235					
ctg	gcc	atg	gac	ccg	cag	caa	cgg	gtg	ctc	ctg	gag	acg	tcc	tgg	gag	767
Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg	Val	Leu	Leu	Glu	Thr	Ser	Trp	Glu	
	240				245					250					255	
gcg	ttc	gaa	agc	gcg	ggc	atc	acc	ccg	gac	gcg	gcg	cgg	ggc	agc	gac	815
Ala	Phe	Glu	Ser	Ala	Gly	Ile	Thr	Pro	Asp	Ala	Ala	Arg	Gly	Ser	Asp	
				260					265					270		
acc	ggc	gtg	ttc	atc	ggc	gcg	ttc	tcc	tac	ggg	tac	ggc	acg	ggt	gcg	863
Thr	Gly	Val	Phe	Ile	Gly	Ala	Phe	Ser	Tyr	Gly	Tyr	Gly	Thr	Gly	Ala	
			275					280					285			
gat	acc	aac	ggc	ttc	ggc	gcg	aca	ggg	tcg	cag	acc	agc	gtg	ctc	tcc	911
Asp	Thr	Asn	Gly	Phe	Gly	Ala	Thr	Gly	Ser	Gln	Thr	Ser	Val	Leu	Ser	
		290					295					300				
ggc	cgc	ctc	tcg	tac	ttc	tac	ggt	ctg	gag	ggc	cct	tcg	gtc	acg	gtc	959
Gly	Arg	Leu	Ser	Tyr	Phe	Tyr	Gly	Leu	Glu	Gly	Pro	Ser	Val	Thr	Val	
	305					310					315					
gac	acc	ggc	tgc	tcg	tcg	tca	ctg	gtc	gcc	ctg	cac	cag	gca	ggg	cag	1007
Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Gln	Ala	Gly	Gln	
	320				325				330						335	
tcc	ctg	cgc	tcg	ggc	gaa	tgc	tcg	ctc	gcc	ctg	gtc	ggc	ggt	gtc	acg	1055
Ser	Leu	Arg	Ser	Gly	Glu	Cys	Ser	Leu	Ala	Leu	Val	Gly	Gly	Val	Thr	
				340					345					350		
gtg	atg	gcg	tcg	ccc	ggc	gga	ttc	gtc	gag	ttc	tcc	cgg	cag	cgc	ggg	1103
Val	Met	Ala	Ser	Pro	Gly	Gly	Phe	Val	Glu	Phe	Ser	Arg	Gln	Arg	Gly	
			355					360					365			
ctc	gcg	ccg	gac	ggg	cgg	gcg	aag	gcg	ttc	ggc	gcg	ggc	gcg	gac	ggt	1151
Leu	Ala	Pro	Asp	Gly	Arg	Ala	Lys	Ala	Phe	Gly	Ala	Gly	Ala	Asp	Gly	
		370					375					380				
acg	agc	ttc	gcc	gag	ggc	gcc	ggt	gcc	ctg	gtg	gtc	gag	cgg	ctc	tcc	1199
Thr	Ser	Phe	Ala	Glu	Gly	Ala	Gly	Ala	Leu	Val	Val	Glu	Arg	Leu	Ser	
	385					390					395					
gac	gcg	gag	cgc	cac	ggc	cac	acc	gtc	ctc	gcc	ctc	gta	cgc	ggc	tcc	1247
Asp	Ala	Glu	Arg	His	Gly	His	Thr	Val	Leu	Ala	Leu	Val	Arg	Gly	Ser	
	400				405				410						415	
gcg	gct	aac	tcc	gac	ggc	gcg	tcg	aac	ggt	ctg	tcg	gcg	ccg	aac	ggc	1295
Ala	Ala	Asn	Ser	Asp	Gly	Ala	Ser	Asn	Gly	Leu	Ser	Ala	Pro	Asn	Gly	
				420				425						430		

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ccc tcc cag gaa cgc gtc atc cac cag gcc ctc gcg aac gcg aaa ctc	1343
Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu	
435 440 445	
acc ccc gcc gat gtc gac gcg gtc gag gcg cac ggc acc ggc acc cgc	1391
Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg	
450 455 460	
ctc ggc gac ccc atc gag gcg cag gcg ctg ctc gcg acg tac gga cag	1439
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln	
465 470 475	
gac cgg gcg acg ccc ctg ctg ctc ggc tcg ctg aag tcg aac atc ggg	1487
Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly	
480 485 490 495	
cac gcc cag gcc gcg tca ggg gtc gcc ggg atc atc aag atg gtg cag	1535
His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln	
500 505 510	
gcc atc cgg cac ggg gaa ctg ccg ccg aca ctg cac gcg gac gag ccg	1583
Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro	
515 520 525	
tcg ccg cac gtc gac tgg acg gcc ggt gcc gtc gag ctc ctg acg tcg	1631
Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser	
530 535 540	
gcc cgg ccg tgg ccg ggg acc ggt cgc cct agg cgg gca ggc gtg tcg	1679
Ala Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Gly Val Ser	
545 550 555	
tcc ttc ggg atc agt ggc acc aac gcc cac gtc atc ctg gaa agc gca	1727
Ser Phe Gly Ile Ser Thr Asn Ala His Val Ile Leu Glu Ser Ala	
560 565 570 575	
ccc ccc act cag cct gcg gac aac gcg gtg atc gag cgg gca ccg gag	1775
Pro Pro Thr Gln Pro Ala Asp Asn Ala Val Ile Glu Arg Ala Pro Glu	
580 585 590	
tgg gtg ccg ttg gtg att tcg gcc agg acc cag tcg gct ttg act gag	1823
Trp Val Pro Leu Val Ile Ser Ala Arg Thr Gln Ser Ala Leu Thr Glu	
595 600 605	
cac gag ggc cgg ttg cgt gcg tat ctg gcg gcg tcg ccc ggg gtg gat	1871
His Glu Gly Arg Leu Arg Ala Tyr Leu Ala Ala Ser Pro Gly Val Asp	
610 615 620	
atg cgg gct gtg gca tcg acg ctg gcg atg aca cgg tcg gtg ttc gag	1919
Met Arg Ala Val Ala Ser Thr Leu Ala Met Thr Arg Ser Val Phe Glu	
625 630 635	
cac cgt gcc gtg ctg ctg gga gat gac acc gtc acc ggc acc gct gtg	1967
His Arg Ala Val Leu Leu Gly Asp Asp Thr Val Thr Gly Thr Ala Val	
640 645 650 655	

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tct gac cct cgg gcg gtg ttc gtc ttc ccg gga cag ggg tcg cag cgt	2015
Ser Asp Pro Arg Ala Val Phe Val Phe Pro Gly Gln Gly Ser Gln Arg	
660 665 670	
gct ggc atg ggt gag gaa ctg gcc gcc gcg ttc ccc gtc ttc gcg cgg	2063
Ala Gly Met Gly Glu Glu Leu Ala Ala Phe Pro Val Phe Ala Arg	
675 680 685	
atc cat cag cag gtg tgg gac ctg ctc gat gtg ccc gat ctg gag gtg	2111
Ile His Gln Gln Val Trp Asp Leu Leu Asp Val Pro Asp Leu Glu Val	
690 695 700	
aac gag acc ggt tac gcc cag ccg gcc ctg ttc gca atg cag gtg gct	2159
Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala Met Gln Val Ala	
705 710 715	
ctg ttc ggg ctg ctg gaa tcg tgg ggt gta cga ccg gac gcg gtg atc	2207
Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro Asp Ala Val Ile	
720 725 730 735	
ggc cat tcg gtg ggt gag ctt gcg gct gcg tat gtg tcc ggg gtg tgg	2255
Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val Ser Gly Val Trp	
740 745 750	
tcg ttg gag gat gcc tgc act ttg gtg tcg gcg cgg gct cgt ctg atg	2303
Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg Ala Arg Leu Met	
755 760 765	
cag gct ctg ccc gcg ggt ggg gtg atg gtc gct gtc ccg gtc tcg gag	2351
Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala Val Pro Val Ser Glu	
770 775 780	
gat gag gcc cgg gcc gtg ctg ggt gag ggt gtg gag atc gcc gcg gtc	2399
Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu Ile Ala Ala Val	
785 790 795	
aac ggc ccg tcg tcg gtg gtt ctc tcc ggt gat gag gcc gcc gtg ctg	2447
Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu Ala Ala Val Leu	
800 805 810 815	
cag gcc gcg gag ggg ctg ggg aag tgg acg cgg ctg gcg acc agc cac	2495
Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu Ala Thr Ser His	
820 825 830	
gcg ttc cat tcc gcc cgt atg gaa ccc atg ctg gag gag ttc cgg gcg	2543
Ala Phe His Ser Ala Arg Met Glu Pro Met Leu Glu Glu Phe Arg Ala	
835 840 845	
gtc gcc gaa ggc ctg acc tac cgg acg ccg cag gtc tcc atg gcc gtt	2591
Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val Ser Met Ala Val	
850 855 860	
ggt gat cag gtg acc acc gct gag tac tgg gtg cgg cag gtc cgg gac	2639
Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg Gln Val Arg Asp	
865 870 875	

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acg gtc cgg ttc ggc gag cag gtg gcc tcg tac gag gac gcc gtg ttc	2687
Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu Asp Ala Val Phe	
880 885 890 895	
gtc gag ctg ggt gcc gac cgg tca ctg gcc cgc ctg gtc gac ggt gtc	2735
Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu Val Asp Gly Val	
900 905 910	
gcg atg ctg cac ggc gac cac gaa atc cag gcc gcg atc ggc gcc ctg	2783
Ala Met Leu His Gly Asp His Glu Ile Gln Ala Ala Ile Gly Ala Leu	
915 920 925	
gcc cac ctg tat gtc aac ggc gtc acg gtc gac tgg ccc gcg ctc ctg	2831
Ala His Leu Tyr Val Asn Gly Val Thr Val Asp Trp Pro Ala Leu Leu	
930 935 940	
ggc gat gct ccg gca aca cgg gtg ctg gac ctt ccg aca tac gcc ttc	2879
Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe	
945 950 955	
cag cac cag cgc tac tgg ctc gag tcg gct ccc ccg gcc acg gcc gac	2927
Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp	
960 965 970 975	
tcg ggc cac ccc gtc ctc ggc acc gga gtc gcc gtc gcc ggg tcg ccg	2975
Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro	
980 985 990	
ggc cgg gtg ttc acg ggt ccc gtg ccc gcc ggt gcg gac cgc gcg gtg	3023
Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val	
995 1000 1005	
ttc atc gcc gaa ctg gcg ctc gcc gcc gcc gac gcc acc gac tgc gcc	3071
Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala	
1010 1015 1020	
acg gtc gaa cag ctc gac gtc acc tcc gtg ccc ggc gga tcc gcc cgc	3119
Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg	
1025 1030 1035	
ggc agg gcc acc gcg cag acc tgg gtc gat gaa ccc gcc gcc gac ggg	3167
Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly	
1040 1045 1050 1055	
cgg cgc cgc ttc acc gtc cac acc cgc gtc ggc gac gcc ccg tgg acg	3215
Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr	
1060 1065 1070	
ctg cac gcc gag ggg gtt ctc cgc ccc ggc cgc gtg ccc cag ccc gaa	3263
Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu	
1075 1080 1085	
gcc gtc gac acc gcc tgg ccc ccg ccg ggc gcg gtg ccc gcg gac ggg	3311
Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly	
1090 1095 1100	

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ctg ccc ggg gcg tgg cga cgc gcg gac cag gtc ttc gtc gaa gcc gaa 3359
 Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu
 1105 1110 1115

gtc gac agc cct gac ggc ttc gtg gca cac ccc gac ctg ctc gac gcg 3407
 Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala
 1120 1125 1130 1135

gtc ttc tcc gcg gtc ggc gac ggg agc cgc cag ccg acc gga tgg cgc 3455
 Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg
 1140 1145 1150

gac ctc gcg gtg cac gcg tcg gac gcc acc gtg ctg cgc gcc tgc ctc 3503
 Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu
 1155 1160 1165

acc cgc cgc gac agt ggt gtc gtg gag ctc gcc gcc ttc gac ggt gcc 3551
 Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala
 1170 1175 1180

gga atg ccg gtg ctc acc gcg gag tcg gtg acg ctg ggc gag gtc gcg 3599
 Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala
 1185 1190 1195

tcg gca ggc gga tcc gac gag tcg gac ggt ctg ctt cgg ctt gag tgg 3647
 Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp
 1200 1205 1210 1215

ttg ccg gtg gcg gag gcc cac tac gac ggt gcc gac gag ctg ccc gag 3695
 Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu
 1220 1225 1230

ggc tac acc ctc atc acc gcc aca cac ccc gac gac ccc gac gac ccc 3743
 Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro
 1235 1240 1245

acc aac ccc cac aac aca ccc aca cgc acc cac aca caa acc aca cgc 3791
 Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg
 1250 1255 1260

gtc ctc acc gcc ctc caa cac cac ctc atc acc acc aac cac acc ctc 3839
 Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu
 1265 1270 1275

atc gtc cac acc acc acc gac ccc cca ggc gcc gcc gtc acc ggc ctc 3887
 Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu
 1280 1285 1290 1295

acc cgc acc gca caa aac gaa cac ccc ggc cgc atc cac ctc atc gaa 3935
 Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu
 1300 1305 1310

acc cac cac ccc cac acc cca ctc ccc ctc acc caa ctc acc acc ctc 3983
 Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu
 1315 1320 1325

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cac caa ccc cac cta cgc ctc acc aac aac acc ctc cac acc ccc cac 4031
 His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His
 1330 1335 1340

ctc acc ccc atc acc acc cac cac aac acc acc aca acc acc ccc aac 4079
 Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Pro Asn
 1345 1350 1355

acc cca ccc ctc aac ccc aac cac gcc atc ctc atc acc gcc gcc tcc 4127
 Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser
 1360 1365 1370 1375

gcc acc ctc gcc gcc atc ctc gcc cgc cac ctc aac cac ccc cac acc 4175
 Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
 1380 1385 1390

tac ctc ctc tcc cgc aca cca cca ccc ccc acc aca ccc gcc acc cac 4223
 Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His
 1395 1400 1405

atc ccc tgc gac ctc acc gac ccc acc caa atc acc caa gcc ctc acc 4271
 Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr
 1410 1415 1420

cac ata cca caa ccc ctc acc gcc atc ttc cac acc gcc gcc acc ctc 4319
 His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu
 1425 1430 1435

gac gac gcc acc ctc acc aac ctc acc ccc caa cac ctc acc acc acc 4367
 Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr
 1440 1445 1450 1455

ctc caa ccc aaa gcc gac gcc gcc tgg cac ctc cac cac cac acc caa 4415
 Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln
 1460 1465 1470

aac caa ccc ctc acc cac ttc gtc ctc tac tcc agc gcc gcc gcc acc 4463
 Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr
 1475 1480 1485

ctc gcc agc ccc gcc caa gcc aac tac gcc gcc gcc aac gcc ttc ctc 4511
 Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu
 1490 1495 1500

gac gcc ctc gcc acc cac cgc cac acc caa gga caa ccc gcc acc acc 4559
 Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr
 1505 1510 1515

atc gcc tgg gcc atg tgg cac acc acc acc aca ctc acc agc caa ctc 4607
 Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu
 1520 1525 1530 1535

acc gac agc gac cgc gac cgc atc cgc cgc gcc gcc ttc ctg ccg atc 4655
 Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
 1540 1545 1550

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tcg gac gac gag ggc atg c
 Ser Asp Asp Glu Gly Met
 1555

4674

<210> 27
 <211> 1557
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 27
 Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
 1 5 10 15
 Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
 20 25 30
 Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
 35 40 45
 Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
 50 55 60
 Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
 65 70 75 80
 Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
 85 90 95
 Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
 100 105 110
 Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
 115 120 125
 Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
 130 135 140
 Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
 145 150 155 160
 Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
 165 170 175
 Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
 180 185 190
 Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
 195 200 205
 Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
 210 215 220

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Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
 225 230 235 240
 Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
 245 250 255
 Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
 260 265 270
 Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
 275 280 285
 Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
 290 295 300
 Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
 305 310 315 320
 Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
 325 330 335
 Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
 340 345 350
 Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
 355 360 365
 Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
 370 375 380
 Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
 385 390 395 400
 Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
 405 410 415
 Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
 420 425 430
 Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
 435 440 445
 Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
 450 455 460
 Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
 465 470 475 480
 Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
 485 490 495
 Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
 500 505 510
 Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
 515 520 525

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Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
 530 535 540
 Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Gly Val Ser Ser
 545 550 555 560
 Phe Gly Ile Ser Gly Thr Asn Ala His Val Ile Leu Glu Ser Ala Pro
 565 570 575
 Pro Thr Gln Pro Ala Asp Asn Ala Val Ile Glu Arg Ala Pro Glu Trp
 580 585 590
 Val Pro Leu Val Ile Ser Ala Arg Thr Gln Ser Ala Leu Thr Glu His
 595 600 605
 Glu Gly Arg Leu Arg Ala Tyr Leu Ala Ala Ser Pro Gly Val Asp Met
 610 615 620
 Arg Ala Val Ala Ser Thr Leu Ala Met Thr Arg Ser Val Phe Glu His
 625 630 635 640
 Arg Ala Val Leu Leu Gly Asp Asp Thr Val Thr Gly Thr Ala Val Ser
 645 650 655
 Asp Pro Arg Ala Val Phe Val Phe Pro Gly Gln Gly Ser Gln Arg Ala
 660 665 670
 Gly Met Gly Glu Glu Leu Ala Ala Ala Phe Pro Val Phe Ala Arg Ile
 675 680 685
 His Gln Gln Val Trp Asp Leu Leu Asp Val Pro Asp Leu Glu Val Asn
 690 695 700
 Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala Met Gln Val Ala Leu
 705 710 715 720
 Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro Asp Ala Val Ile Gly
 725 730 735
 His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val Ser Gly Val Trp Ser
 740 745 750
 Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg Ala Arg Leu Met Gln
 755 760 765
 Ala Leu Pro Ala Gly Gly Val Met Val Ala Val Pro Val Ser Glu Asp
 770 775 780
 Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu Ile Ala Ala Val Asn
 785 790 795 800
 Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu Ala Ala Val Leu Gln
 805 810 815
 Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu Ala Thr Ser His Ala
 820 825 830

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Phe His Ser Ala Arg Met Glu Pro Met Leu Glu Glu Phe Arg Ala Val
 835 840 845
 Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val Ser Met Ala Val Gly
 850 855 860
 Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg Gln Val Arg Asp Thr
 865 870 875 880
 Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu Asp Ala Val Phe Val
 885 890 895
 Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu Val Asp Gly Val Ala
 900 905 910
 Met Leu His Gly Asp His Glu Ile Gln Ala Ala Ile Gly Ala Leu Ala
 915 920 925
 His Leu Tyr Val Asn Gly Val Thr Val Asp Trp Pro Ala Leu Leu Gly
 930 935 940
 Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln
 945 950 955 960
 His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser
 965 970 975
 Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly
 980 985 990
 Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe
 995 1000 1005
 Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr
 1010 1015 1020
 Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly
 1025 1030 1035 1040
 Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg
 1045 1050 1055
 Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu
 1060 1065 1070
 His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala
 1075 1080 1085
 Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu
 1090 1095 1100
 Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val
 1105 1110 1115 1120
 Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val
 1125 1130 1135

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Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp
 1140 1145 1150
 Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr
 1155 1160 1165
 Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly
 1170 1175 1180
 Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser
 1185 1190 1195 1200
 Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu
 1205 1210 1215
 Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly
 1220 1225 1230
 Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr
 1235 1240 1245
 Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val
 1250 1255 1260
 Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile
 1265 1270 1275 1280
 Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr
 1285 1290 1295
 Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr
 1300 1305 1310
 His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His
 1315 1320 1325
 Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu
 1330 1335 1340
 Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Pro Asn Thr
 1345 1350 1355 1360
 Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly
 1365 1370 1375
 Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr
 1380 1385 1390
 Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile
 1395 1400 1405
 Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His
 1410 1415 1420
 Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp
 1425 1430 1435 1440

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Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu
1445 1450 1455

Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn
1460 1465 1470

Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu
1475 1480 1485

Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
1490 1495 1500

Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile
505 1510 1515 152

Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr
1525 1530 1535

Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser
1540 1545 1550

Asp Asp Glu Gly Met
1555

<210> 28

<211> 4767

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>

<221> CDS

<222> (3) .. (4766)

<400> 28

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Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val
1 5 10 15

gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg 95
Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly
20 25 30

ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc 143
Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu
35 40 45

gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc 191
Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro
50 55 60

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Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly
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80 85 90 95	
tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc	335
Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly	
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gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg	383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala	
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ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc	431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val	
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gcg gcc cgg acc gcg gcc acc gcg gcc gcg cac gac gaa ccg ctg gcg	479
Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala	
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atc gtg ggc atg gcc tgc cgt ctg ccg ggc ggg gtc gcg tcg cca cag	527
Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln	
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gag ctg tgg cgt ctc gtc gcg tcc ggc acc gac gcc atc acg gag ttc	575
Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe	
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ccc gcg gac cgc ggc tgg gac gtg gac gcg ctc tac gac ccg gac ccc	623
Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro	
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Asp Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly	
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Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala	
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ctg gcc atg gac ccg cag caa ccg gtg ctc ctg gag acg tcc tgg gag	767
Leu Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu	
240 245 250 255	
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Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp	
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Thr Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala	
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gat acc aac ggc ttc ggc gcg aca ggg tcg cag acc agc gtg ctc tcc	911
Asp Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser	
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ctc gcg ccg gac ggg cgg gcg aag gcg ttc ggc gcg ggc gcg gac ggt Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly 370 375 380	1151
acg agc ttc gcc gag ggc gcc ggt gcc ctg gtg gtc gag cgg ctc tcc Thr Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser 385 390 395	1199
gac gcg gag cgc cac ggc cac acc gtc ctc gcc ctc gta cgc ggc tcc Asp Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser 400 405 410 415	1247
gcg gct aac tcc gac ggc gcg tcg aac ggt ctg tcg gcg ccg aac ggc Ala Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly 420 425 430	1295
ccc tcc cag gaa cgc gtc atc cac cag gcc ctc gcg aac gcg aaa ctc Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu 435 440 445	1343
acc ccc gcc gat gtc gac gcg gtc gag gcg cac ggc acc ggc acc cgc Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg 450 455 460	1391
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gac cgg gcg acg ccc ctg ctg ctc ggc tcg ctg aag tcg aac atc ggg Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly 480 485 490 495	1487
cac gcc cag gcc gcg tca ggg gtc gcc ggg atc atc aag atg gtg cag His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln 500 505 510	1535
gcc atc cgg cac ggg gaa ctg ccg ccg aca ctg cac gcg gac gag ccg Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro 515 520 525	1583

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Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser	
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Ala Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Gly Val Ser	
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tcc ttc gga gtc agc ggc acc aac gcc cac gtc atc ctg gag agc gca	1727
Ser Phe Gly Val Ser Thr Asn Ala His Val Ile Leu Glu Ser Ala	
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ccc ccc gct cag ccc gcg gag gag gcg cag cct gtt gag acg ccg gtg	1775
Pro Pro Ala Gln Pro Ala Glu Glu Ala Gln Pro Val Glu Thr Pro Val	
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Val Ala Ser Asp Val Leu Pro Leu Val Ile Ser Ala Lys Thr Gln Pro	
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gcc ctg acc gaa cac gaa gac cgg ctg cgc gcc tac ctg gcg gcg tcg	1871
Ala Leu Thr Glu His Glu Asp Arg Leu Arg Ala Tyr Leu Ala Ala Ser	
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Pro Gly Ala Asp Ile Arg Ala Val Ala Ser Thr Leu Ala Val Thr Arg	
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Arg Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu	
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gcc gcg gtg tgg cag gcg gcc ggt gtg cgg ccg gat gcg gtg atc ggc	2255
Ala Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly	
740 745 750	

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His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser	
755 760 765	
cta cgc gat gcc gcc cgg atc gtg acc ttg cgc agc cag gcg atc gcc	2351
Leu Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala	
770 775 780	
cgg ggc ctg gcg ggc cgg ggc gcg atg gca tcc gtc gcc ctg ccc gcg	2399
Arg Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala	
785 790 795	
cag gat gtc gag ctg gtc gac ggg gcc tgg atc gcc gcc cac aac ggg	2447
Gln Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly	
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Pro Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val	
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ctc acc gct cat gag gca caa ggg gtg cgg gtg cgg cgg atc acc gtc	2543
Leu Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val	
835 840 845	
gac tat gcc tcg cac acc ccg cac gtc gag ctg atc cgc gac gaa cta	2591
Asp Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu	
850 855 860	
ctc gac atc act agc gac agc agc tcg cag acc ccg ctc gtg ccg tgg	2639
Leu Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp	
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Leu Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu	
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tac tgg tac cgg aac ctg cgt gaa ccg gtc ggt ttc cac ccc gcc gtc	2735
Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val	
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Ser Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala	
915 920 925	
agc ccg gtg ttg ttg cag gcg atg gac gac gat gtc gtc acg gtt gcc	2831
Ser Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala	
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Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu	
945 950 955	
gca cag gcc tat gtc cac ggc gtc acc gtc gac tgg ccc gcc atc ctc	2927
Ala Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu	
960 965 970 975	

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Gly Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln	
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cac cag cgg tac tgg ctc gag tcg gct ccc ccg gcc acg gcc gac tcg	3023
His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser	
995 1000 1005	
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Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly	
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atc gcc gaa ctg gcg ctc gcc gcc gcc gac gcc acc gac tgc gcc acg	3167
Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr	
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Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly	
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His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala	
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Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val	
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Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp	
1170 1175 1180	
ctc gcg gtg cac gcg tcg gac gcc acc gtg ctg cgc gcc tgc ctc acc	3599
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1185 1190 1195	

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 Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly
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 atg ccg gtg ctc acc gcg gag tcg gtg acg ctg ggc gag gtc gcg tcg 3695
 Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser
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 gca ggc gga tcc gac gag tcg gac ggt ctg ctt cgg ctt gag tgg ttg 3743
 Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu
 1235 1240 1245
 ccg gtg gcg gag gcc cac tac gac ggt gcc gac gag ctg ccc gag ggc 3791
 Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly
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 Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr
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 aac ccc cac aac aca ccc aca cgc acc cac aca caa acc aca cgc gtc 3887
 Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val
 1280 1285 1290 1295
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 Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile
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 gtc cac acc acc acc acc gac ccc cca ggc gcc gcc gtc acc ggc ctc acc 3983
 Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr
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 cgc acc gca caa aac gaa cac ccc ggc cgc atc cac ctc atc gaa acc 4031
 Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr
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 His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His
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 1380 1385 1390
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 1395 1400 1405
 acc ctc gcc ggc atc ctc gcc cgc cac ctc aac cac ccc cac acc tac 4271
 Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr
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ccc tgc gac ctc acc gac ccc acc caa atc acc caa gcc ctc acc cac 4367
 Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His
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 Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp
 1460 1465 1470

gac gcc acc ctc acc aac ctc acc ccc caa cac ctc acc acc acc ctc 4463
 Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu
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 Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn
 1490 1495 1500

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 Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu
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ggc agc ccc ggc caa gcc aac tac gcc gcc gcc aac gcc ttc ctc gac 4607
 Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
 1520 1525 1530 1535

gcc ctc gcc acc cac cgc cac acc caa gga caa ccc gcc acc acc atc 4655
 Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile
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gcc tgg ggc atg tgg cac acc acc acc aca ctc acc agc caa ctc acc 4703
 Ala Trp Gly Met Trp His Thr Thr Thr Leu Thr Ser Gln Leu Thr
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gac agc gac cgc gac cgc atc cgc cgc ggc ggc ttc ctg ccg atc tcg 4751
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 Asp Asp Glu Gly Met
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<211> 1588

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 29

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 1 5 10 15

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Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
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 Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
 35 40 45
 Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
 50 55 60
 Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
 65 70 75 80
 Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
 85 90 95
 Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
 100 105 110
 Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
 115 120 125
 Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
 130 135 140
 Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
 145 150 155 160
 Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
 165 170 175
 Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
 180 185 190
 Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
 195 200 205
 Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
 210 215 220
 Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
 225 230 235 240
 Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
 245 250 255
 Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
 260 265 270
 Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
 275 280 285
 Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
 290 295 300
 Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
 305 310 315 320

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 102280-97E04650

Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
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 Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
 340 345 350
 Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
 355 360 365
 Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
 370 375 380
 Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
 385 390 395 400
 Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
 405 410 415
 Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
 420 425 430
 Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
 435 440 445
 Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
 450 455 460
 Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
 465 470 475 480
 Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
 485 490 495
 Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
 500 505 510
 Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
 515 520 525
 Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
 530 535 540
 Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Gly Val Ser Ser
 545 550 555 560
 Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu Ser Ala Pro
 565 570 575
 Pro Ala Gln Pro Ala Glu Glu Ala Gln Pro Val Glu Thr Pro Val Val
 580 585 590
 Ala Ser Asp Val Leu Pro Leu Val Ile Ser Ala Lys Thr Gln Pro Ala
 595 600 605
 Leu Thr Glu His Glu Asp Arg Leu Arg Ala Tyr Leu Ala Ala Ser Pro
 610 615 620

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Gly Ala Asp Ile Arg Ala Val Ala Ser Thr Leu Ala Val Thr Arg Ser
 625 630 635 640
 Val Phe Glu His Arg Ala Val Leu Leu Gly Asp Asp Thr Val Thr Gly
 645 650 655
 Thr Ala Val Thr Asp Pro Arg Ile Val Phe Val Phe Pro Gly Gln Gly
 660 665 670
 Trp Gln Trp Leu Gly Met Gly Ser Ala Leu Arg Asp Ser Ser Val Val
 675 680 685
 Phe Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe Val
 690 695 700
 Asp Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val Asp Arg
 705 710 715 720
 Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu Ala
 725 730 735
 Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly His
 740 745 750
 Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser Leu
 755 760 765
 Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala Arg
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 Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala Gln
 785 790 795 800
 Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly Pro
 805 810 815
 Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val Leu
 820 825 830
 Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val Asp
 835 840 845
 Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu Leu
 850 855 860
 Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp Leu
 865 870 875 880
 Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu Tyr
 885 890 895
 Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val Ser
 900 905 910
 Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala Ser
 915 920 925

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Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala Thr
 930 935 940
 Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu Ala
 945 950 955 960
 Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu Gly
 965 970 975
 Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln His
 980 985 990
 Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser Gly
 995 1000 1005
 His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly Arg
 1010 1015 1020
 Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe Ile
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 Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr Val
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 Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly Arg
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 Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg Arg
 1075 1080 1085
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 Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala Val
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 Asp Thr Ala Trp Pro Pro Gly Ala Val Pro Ala Asp Gly Leu Pro
 1125 1130 1135
 Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val Asp
 1140 1145 1150
 Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val Phe
 1155 1160 1165
 Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp Leu
 1170 1175 1180
 Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr Arg
 185 1190 1195 120
 Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly Met
 1205 1210 1215
 Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser Ala
 1220 1225 1230

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Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu Pro
 1235 1240 1245
 Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly Tyr
 1250 1255 1260
 Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr Asn
 265 1270 1275 128
 Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val Leu
 1285 1290 1295
 Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile Val
 1300 1305 1310
 His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr Arg
 1315 1320 1325
 Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr His
 1330 1335 1340
 His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His Gln
 345 1350 1355 136
 Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu Thr
 1365 1370 1375
 Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn Thr Pro
 1380 1385 1390
 Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly Thr
 1395 1400 1405
 Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr Leu
 1410 1415 1420
 Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile Pro
 425 1430 1435 144
 Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His Ile
 1445 1450 1455
 Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp Asp
 1460 1465 1470
 Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu Gln
 1475 1480 1485
 Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn Gln
 1490 1495 1500
 Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu Gly
 505 1510 1515 152
 Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala
 1525 1530 1535

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Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile Ala
 1540 1545 1550

Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr Asp
 1555 1560 1565

Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser Asp
 1570 1575 1580

Asp Glu Gly Met
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<210> 30

<211> 4737

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>

<221> CDS

<222> (3)..(4736)

<400> 30

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gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg 95
 Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly
 20 25 30

ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc 143
 Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu
 35 40 45

gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc 191
 Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro
 50 55 60

tcg cgt tcg tcc tgg aac agc acc gcc acc gtg ctc ggc cac ctg ggc 239
 Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly
 65 70 75

gcc gaa gac atc ccg gcg acg acg acg ttc aag gaa ctc ggc atc gac 287
 Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp
 80 85 90 95

tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc 335
 Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly
 100 105 110

gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg 383
 Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala
 115 120 125

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ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc	431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val	
130 135 140	
gcg gcc cgg acc gcg gcc acc gcg gcc gcg cac gac gaa ccg ctg gcg	479
Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala	
145 150 155	
atc gtg ggc atg gcc tgc cgt ctg ccg ggc ggg gtc gcg tcg cca cag	527
Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln	
160 165 170 175	
gag ctg tgg cgt ctc gtc gcg tcc ggc acc gac gcc atc acg gag ttc	575
Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe	
180 185 190	
ccc gcg gac cgc ggc tgg gac gtg gac gcg ctc tac gac ccg gac ccc	623
Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro	
195 200 205	
gac gcg atc ggc aag acc ttc gtc cgg cac ggc ggc ttc ctc gac ggt	671
Asp Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly	
210 215 220	
gcg acc ggc ttc gac gcg gcg ttc ttc ggg atc agc ccg cgc gag gcc	719
Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala	
225 230 235	
ctg gcc atg gac ccg cag caa cgg gtg ctc ctg gag acg tcc tgg gag	767
Leu Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu	
240 245 250 255	
gcg ttc gaa agc gcg ggc atc acc ccg gac gcg gcg cgg ggc agc gac	815
Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp	
260 265 270	
acc ggc gtg ttc atc ggc gcg ttc tcc tac ggg tac ggc acg ggt gcg	863
Thr Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala	
275 280 285	
gat acc aac ggc ttc ggc gcg aca ggg tcg cag acc agc gtg ctc tcc	911
Asp Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser	
290 295 300	
ggc cgc ctc tcg tac ttc tac ggt ctg gag ggc cct tcg gtc acg gtc	959
Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val	
305 310 315	
gac acc gcc tgc tcg tcg tca ctg gtc gcc ctg cac cag gca ggg cag	1007
Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln	
320 325 330 335	
tcc ctg cgc tcg ggc gaa tgc tcg ctc gcc ctg gtc ggc ggt gtc acg	1055
Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr	
340 345 350	

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gtg atg gcg tcg ccc ggc gga ttc gtc gag ttc tcc cgg cag cgc ggg	1103
Val Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly	
355 360 365	
ctc gcg ccg gac ggg cgg gcg aag gcg ttc ggc gcg ggc gcg gac ggt	1151
Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly	
370 375 380	
acg agc ttc gcc gag ggc gcc ggt gcc ctg gtg gtc gag cgg ctc tcc	1199
Thr Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Glu Arg Leu Ser	
385 390 395	
gac gcg gag cgc cac ggc cac acc gtc ctc gcc ctc gta cgc ggc tcc	1247
Asp Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser	
400 405 410 415	
gcg gct aac tcc gac ggc gcg tcg aac ggt ctg tcg gcg ccg aac ggc	1295
Ala Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly	
420 425 430	
ccc tcc cag gaa cgc gtc atc cac cag gcc ctc gcg aac gcg aaa ctc	1343
Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu	
435 440 445	
acc ccc gcc gat gtc gac gcg gtc gag gcg cac ggc acc ggc acc cgc	1391
Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg	
450 455 460	
ctc ggc gac ccc atc gag gcg cag gcg ctg ctc gcg acg tac gga cag	1439
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln	
465 470 475	
gac cgg gcg acg ccc ctg ctg ctc ggc tcg ctg aag tcg aac atc ggg	1487
Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly	
480 485 490 495	
cac gcc cag gcc gcg tca ggg gtc gcc ggg atc atc aag atg gtg cag	1535
His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln	
500 505 510	
gcc atc cgg cac ggg gaa ctg ccg ccg aca ctg cac gcg gac gag ccg	1583
Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro	
515 520 525	
tcg ccg cac gtc gac tgg acg gcc ggt gcc gtc gag ctc ctg acg tcg	1631
Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser	
530 535 540	
gcc cgg ccg tgg ccg ggg acc ggt cgc ccg cgc cgc gct gcc gtc tcg	1679
Ala Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser	
545 550 555	
tcg ttc ggc gtg agc ggc acg aac gcc cac atc atc ctt gag gca gga	1727
Ser Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly	
560 565 570 575	

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ccg gtc aaa acg gga ccg gtc gag gca gga gcg atc gag gca gga ccg	1775
Pro Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro	
580 585 590	
gtc gaa gta gga ccg gtc gag gct gga ccg ctc ccc gcg gcg ccg ccg	1823
Val Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro	
595 600 605	
tca gca ccg ggc gaa gac ctt ccg ctg ctc gtg tcg gcg cgt tcc ccg	1871
Ser Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro	
610 615 620	
gag gca ctc gac gag cag atc ggg cgc ctg cgc gcc tat ctc gac acc	1919
Glu Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr	
625 630 635	
ggc ccg ggc gtc gac cgg gcg gcc gtg gcg cag aca ctg gcc cgg cgt	1967
Gly Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg	
640 645 650 655	
acg cac ttc acc cac cgg gcc gta ctg ctc ggg gac acc gtc atc ggc	2015
Thr His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly	
660 665 670	
gct ccc ccc gcg gac cag gcc gac gaa ctc gtc ttc gtc tac tcc ggt	2063
Ala Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly	
675 680 685	
cag ggc acc cag cat ccc gcg atg ggc gag cag cta gcc gcc gcg ttc	2111
Gln Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe	
690 695 700	
ccc gtc ttc gcg cgg atc cat cag cag gtg tgg gac ctg ctc gat gtg	2159
Pro Val Phe Ala Arg Ile His Gln Gln Val Trp Asp Leu Leu Asp Val	
705 710 715	
ccc gat ctg gag gtg aac gag acc ggt tac gcc cag ccg gcc ctg ttc	2207
Pro Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe	
720 725 730 735	
gca atg cag gtg gct ctg ttc ggg ctg ctg gaa tcg tgg ggt gta cga	2255
Ala Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg	
740 745 750	
ccg gac gcg gtg atc ggc cat tcg gtg ggt gag ctt gcg gct gcg tat	2303
Pro Asp Ala Val Ile Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr	
755 760 765	
gtg tcc ggg gtg tgg tcg ttg gag gat gcc tgc act ttg gtg tcg gcg	2351
Val Ser Gly Val Trp Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala	
770 775 780	
cgg gct cgt ctg atg cag gct ctg ccc gcg ggt ggg gtg atg gtc gct	2399
Arg Ala Arg Leu Met Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala	
785 790 795	

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gtc ccg gtc tcg gag gat gag gcc cgg gcc gtg ctg ggt gag ggt gtg 2447
 Val Pro Val Ser Glu Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val
 800 805 810 815

gag atc gcc gcg gtc aac ggc ccg tcg tcg gtg gtt ctc tcc ggt gat 2495
 Glu Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp
 820 825 830

gag gcc gcc gtg ctg cag gcc gcg gag ggg ctg ggg aag tgg acg cgg 2543
 Glu Ala Ala Val Leu Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg
 835 840 845

ctg gcg acc agc cac gcg ttc cat tcc gcc cgt atg gaa ccc atg ctg 2591
 Leu Ala Thr Ser His Ala Phe His Ser Ala Arg Met Glu Pro Met Leu
 850 855 860

gag gag ttc cgg gcg gtc gcc gaa ggc ctg acc tac cgg acg ccg cag 2639
 Glu Glu Phe Arg Ala Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln
 865 870 875

gtc tcc atg gcc gtt ggt gat cag gtg acc acc gct gag tac tgg gtg 2687
 Val Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val
 880 885 890 895

cgg cag gtc cgg gac acg gtc cgg ttc ggc gag cag gtg gcc tcg tac 2735
 Arg Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr
 900 905 910

gag gac gcc gtg ttc gtc gag ctg ggt gcc gac cgg tca ctg gcc cgc 2783
 Glu Asp Ala Val Phe Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg
 915 920 925

ctg gtc gac ggt gtc gcg atg ctg cac ggc gac cac gaa atc cag gcc 2831
 Leu Val Asp Gly Val Ala Met Leu His Gly Asp His Glu Ile Gln Ala
 930 935 940

gcg atc ggc gcc ctg gcc cac ctg tat gtc aac ggc gtc acg gtc gac 2879
 Ala Ile Gly Ala Leu Ala His Leu Tyr Val Asn Gly Val Thr Val Asp
 945 950 955

tgg ccc gcg ctc ctg ggc gat gct ccg gca aca cgg gtg ctg gac ctt 2927
 Trp Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu
 960 965 970 975

ccg aca tac gcc ttc cag cac cag cgc tac tgg ctc gag tcg gct ccc 2975
 Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Pro
 980 985 990

ccg gcc acg gcc gac tcg ggc cac ccc gtc ctc ggc acc gga gtc gcc 3023
 Pro Ala Thr Ala Asp Ser Gly His Pro Val Leu Gly Thr Gly Val Ala
 995 1000 1005

gtc gcc ggg tcg ccg ggc cgg gtg ttc acg ggt ccc gtg ccc gcc ggt 3071
 Val Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly
 1010 1015 1020

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gcg gac cgc gcg gtg ttc atc gcc gaa ctg gcg ctc gcc gcc gcc gac 3119
Ala Asp Arg Ala Val Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp
1025 1030 1035

gcc acc gac tgc gcc acg gtc gaa cag ctc gac gtc acc tcc gtg ccc 3167
Ala Thr Asp Cys Ala Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro
1040 1045 1050 1055

ggc gga tcc gcc cgc ggc agg gcc acc gcg cag acc tgg gtc gat gaa 3215
Gly Gly Ser Ala Arg Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu
1060 1065 1070

ccc gcc gcc gac ggg cgg cgc cgc ttc acc gtc cac acc cgc gtc ggc 3263
Pro Ala Ala Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Val Gly
1075 1080 1085

gac gcc ccg tgg acg ctg cac gcc gag ggg gtt ctc cgc ccc ggc cgc 3311
Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg
1090 1095 1100

gtg ccc cag ccc gaa gcc gtc gac acc gcc tgg ccc ccg ccg ggc gcg 3359
Val Pro Gln Pro Glu Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala
1105 1110 1115

gtg ccc gcg gac ggg ctg ccc ggg gcg tgg cga cgc gcg gac cag gtc 3407
Val Pro Ala Asp Gly Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val
1120 1125 1130 1135

ttc gtc gaa gcc gaa gtc gac agc cct gac ggc ttc gtg gca cac ccc 3455
Phe Val Glu Ala Glu Val Asp Ser Pro Asp Gly Phe Val Ala His Pro
1140 1145 1150

gac ctg ctc gac gcg gtc ttc tcc gcg gtc ggc gac ggg agc cgc cag 3503
Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln
1155 1160 1165

ccg acc gga tgg cgc gac ctc gcg gtg cac gcg tcg gac gcc acc gtg 3551
Pro Thr Gly Trp Arg Asp Leu Ala Val His Ala Ser Asp Ala Thr Val
1170 1175 1180

ctg cgc gcc tgc ctc acc cgc cgc gac agt ggt gtc gtg gag ctc gcc 3599
Leu Arg Ala Cys Leu Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala
1185 1190 1195

gcc ttc gac ggt gcc gga atg ccg gtg ctc acc gcg gag tcg gtg acg 3647
Ala Phe Asp Gly Ala Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr
1200 1205 1210 1215

ctg ggc gag gtc gcg tcg gca ggc gga tcc gac gag tcg gac ggt ctg 3695
Leu Gly Glu Val Ala Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu
1220 1225 1230

ctt cgg ctt gag tgg ttg ccg gtg gcg gag gcc cac tac gac ggt gcc 3743
Leu Arg Leu Glu Trp Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala
1235 1240 1245

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gac gag ctg ccc gag ggc tac acc ctc atc acc gcc aca cac ccc gac 3791
 Asp Glu Leu Pro Glu Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp
 1250 1255 1260

gac ccc gac gac ccc acc aac ccc cac aac aca ccc aca cgc acc cac 3839
 Asp Pro Asp Asp Pro Thr Asn Pro His Asn Thr Pro Thr Arg Thr His
 1265 1270 1275

aca caa acc aca cgc gtc ctc acc gcc ctc caa cac cac ctc atc acc 3887
 Thr Gln Thr Thr Arg Val Leu Thr Ala Leu Gln His His Leu Ile Thr
 1280 1285 1290 1295

acc aac cac acc ctc atc gtc cac acc acc acc gac ccc cca ggc gcc 3935
 Thr Asn His Thr Leu Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala
 1300 1305 1310

gcc gtc acc ggc ctc acc cgc acc gca caa aac gaa cac ccc ggc cgc 3983
 Ala Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg
 1315 1320 1325

atc cac ctc atc gaa acc cac cac ccc cac acc cca ctc ccc ctc acc 4031
 Ile His Leu Ile Glu Thr His His Pro His Thr Pro Leu Pro Leu Thr
 1330 1335 1340

caa ctc acc acc ctc cac caa ccc cac cta cgc ctc acc aac aac acc 4079
 Gln Leu Thr Thr Leu His Gln Pro His Leu Arg Leu Thr Asn Asn Thr
 1345 1350 1355

ctc cac acc ccc cac ctc acc ccc atc acc acc cac cac aac acc acc 4127
 Leu His Thr Pro His Leu Thr Pro Ile Thr Thr His His Asn Thr Thr
 1360 1365 1370 1375

aca acc acc ccc aac acc cca ccc ctc aac ccc aac cac gcc atc ctc 4175
 Thr Thr Thr Pro Asn Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu
 1380 1385 1390

atc acc ggc ggc tcc ggc acc ctc gcc ggc atc ctc gcc cgc cac ctc 4223
 Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu
 1395 1400 1405

aac cac ccc cac acc tac ctc ctc tcc cgc aca cca cca ccc ccc acc 4271
 Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr
 1410 1415 1420

aca ccc ggc acc cac atc ccc tgc gac ctc acc gac ccc acc caa atc 4319
 Thr Pro Gly Thr His Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile
 1425 1430 1435

acc caa gcc ctc acc cac ata cca caa ccc ctc acc ggc atc ttc cac 4367
 Thr Gln Ala Leu Thr His Ile Pro Gln Pro Leu Thr Gly Ile Phe His
 1440 1445 1450 1455

acc gcc gcc acc ctc gac gac gcc acc ctc acc aac ctc acc ccc caa 4415
 Thr Ala Ala Thr Leu Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln
 1460 1465 1470

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cac ctc acc acc acc ctc caa ccc aaa gcc gac gcc gcc tgg cac ctc 4463
His Leu Thr Thr Thr Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu
1475 1480 1485

cac cac cac acc caa aac caa ccc ctc acc cac ttc gtc ctc tac tcc 4511
His His His Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser
1490 1495 1500

agc gcc gcc gcc acc ctc ggc agc ccc ggc caa gcc aac tac gcc gcc 4559
Ser Ala Ala Ala Thr Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala
1505 1510 1515

gcc aac gcc ttc ctc gac gcc ctc gcc acc cac cgc cac acc caa gga 4607
Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Gln Gly
1520 1525 1530 1535

caa ccc gcc acc acc atc gcc tgg ggc atg tgg cac acc acc acc aca 4655
Gln Pro Ala Thr Thr Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr
1540 1545 1550

ctc acc agc caa ctc acc gac agc gac cgc gac cgc atc cgc cgc ggc 4703
Leu Thr Ser Gln Leu Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly
1555 1560 1565

ggc ttc ctg ccg atc tcg gac gac gag ggc atg c 4737
Gly Phe Leu Pro Ile Ser Asp Asp Glu Gly Met
1570 1575

<210> 31

<211> 1578

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 31

Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
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Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
20 25 30

Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
35 40 45

Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
50 55 60

Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
65 70 75 80

Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
85 90 95

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Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
 100 105 110
 Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
 115 120 125
 Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
 130 135 140
 Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
 145 150 155 160
 Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
 165 170 175
 Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
 180 185 190
 Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
 195 200 205
 Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
 210 215 220
 Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
 225 230 235 240
 Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
 245 250 255
 Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
 260 265 270
 Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
 275 280 285
 Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
 290 295 300
 Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
 305 310 315 320
 Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
 325 330 335
 Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
 340 345 350
 Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
 355 360 365
 Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
 370 375 380
 Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
 385 390 395 400

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Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
 405 410 415
 Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
 420 425 430
 Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
 435 440 445
 Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
 450 455 460
 Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
 465 470 475 480
 Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
 485 490 495
 Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
 500 505 510
 Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
 515 520 525
 Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
 530 535 540
 Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser Ser
 545 550 555 560
 Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly Pro
 565 570 575
 Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro Val
 580 585 590
 Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro Ser
 595 600 605
 Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
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 Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr Gly
 625 630 635 640
 Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
 645 650 655
 His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly Ala
 660 665 670
 Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
 675 680 685
 Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe Pro
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Val Phe Ala Arg Ile His Gln Gln Val Trp Asp Leu Leu Asp Val Pro
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 Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala
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 Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro
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 Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu
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 850 855 860
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 865 870 875 880
 Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg
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 Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu
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<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

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<221> CDS

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Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly	
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Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu	
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Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro	
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Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly	
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Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp	
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Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly	
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gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg	383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala	
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Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val	
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Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala	
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Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln	
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Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe	
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Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro	
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Asp Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly	
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Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala	
225 230 235	
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Leu Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu	
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Thr Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala	
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Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val	
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Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln	
320 325 330 335	
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Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr	
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Val Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly	
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Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly	
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Thr Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser	
385 390 395	
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Asp Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser	
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Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu	
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Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg	
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Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln	
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Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly	
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His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln	
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Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro	
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Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser	
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Pro Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro	
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Val Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro	
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Ser Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro	
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Thr His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly	
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Ser Leu Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile	
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 His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu
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 Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
 180 185 190
 Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
 195 200 205
 Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
 210 215 220
 Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
 225 230 235 240
 Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
 245 250 255
 Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
 260 265 270
 Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
 275 280 285
 Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
 290 295 300
 Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
 305 310 315 320
 Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
 325 330 335
 Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
 340 345 350
 Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
 355 360 365
 Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
 370 375 380
 Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
 385 390 395 400
 Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
 405 410 415
 Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
 420 425 430
 Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
 435 440 445

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Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
 450 455 460
 Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
 465 470 475 480
 Arg Ala Thr Pro Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
 485 490 495
 Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
 500 505 510
 Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
 515 520 525
 Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
 530 535 540
 Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser Ser
 545 550 555 560
 Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly Pro
 565 570 575
 Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro Val
 580 585 590
 Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro Ser
 595 600 605
 Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
 610 615 620
 Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr Gly
 625 630 635 640
 Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
 645 650 655
 His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly Ala
 660 665 670
 Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
 675 680 685
 Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Asp Ser Ser Val
 690 695 700
 Val Phe Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe
 705 710 715 720
 Val Asp Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val Asp
 725 730 735
 Arg Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu
 740 745 750

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Ala Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly
 755 760 765
 His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser
 770 775 780
 Leu Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala
 785 790 795 800
 Arg Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala
 805 810 815
 Gln Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly
 820 825 830
 Pro Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val
 835 840 845
 Leu Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val
 850 855 860
 Asp Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu
 865 870 875 880
 Leu Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp
 885 890 895
 Leu Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu
 900 905 910
 Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val
 915 920 925
 Ser Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala
 930 935 940
 Ser Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala
 945 950 955 960
 Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu
 965 970 975
 Ala Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu
 980 985 990
 Gly Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln
 995 1000 1005
 His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser
 1010 1015 1020
 Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly
 025 1030 1035 104
 Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe
 1045 1050 1055

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 102280-91E04660

Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr
 1060 1065 1070
 Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly
 1075 1080 1085
 Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg
 1090 1095 1100
 Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu
 1105 1110 1115 112
 His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala
 1125 1130 1135
 Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu
 1140 1145 1150
 Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val
 1155 1160 1165
 Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val
 1170 1175 1180
 Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp
 1185 1190 1195 120
 Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr
 1205 1210 1215
 Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly
 1220 1225 1230
 Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser
 1235 1240 1245
 Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu
 1250 1255 1260
 Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly
 1265 1270 1275 128
 Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr
 1285 1290 1295
 Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val
 1300 1305 1310
 Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile
 1315 1320 1325
 Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr
 1330 1335 1340
 Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr
 1345 1350 1355 136

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His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His
 1365 1370 1375
 Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu
 1380 1385 1390
 Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn Thr
 1395 1400 1405
 Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly
 1410 1415 1420
 Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr
 425 1430 1435 144
 Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile
 1445 1450 1455
 Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His
 1460 1465 1470
 Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp
 1475 1480 1485
 Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu
 1490 1495 1500
 Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn
 505 1510 1515 152
 Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu
 1525 1530 1535
 Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
 1540 1545 1550
 Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile
 1555 1560 1565
 Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr
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 Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser
 585 1590 1595 160
 Asp Asp Glu Gly Met
 1605

<210> 34

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

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<220>
 <221> CDS
 <222> (1)..(33)

<400> 34
 ggc cgt ccg cgc cgt gcg gcg gtc tcg tcg ttc 33
 Gly Arg Pro Arg Arg Ala Ala Val Ser Ser Phe
 1 5 10

<210> 35
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 35
 Gly Arg Pro Arg Arg Ala Ala Val Ser Ser Phe
 1 5 10

<210> 36
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS
 <222> (1)..(33)

<400> 36
 acc cag cat ccc gcg atg ggt gag cgg ctc gcc 33
 Thr Gln His Pro Ala Met Gly Glu Arg Leu Ala
 1 5 10

<210> 37
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 37
 Thr Gln His Pro Ala Met Gly Glu Arg Leu Ala
 1 5 10

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<210> 38
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS
 <222> (1)..(33)

<400> 38
 tac gcc ttc cag cgg cgg ccc tac tgg atc gag 33
 Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile Glu
 1 5 10

<210> 39
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 39
 Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile Glu
 1 5 10

<210> 40
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS
 <222> (1)..(33)

<400> 40
 gac cgg ccc cgt cgg gcg ggc gtg tgg tcc ttc 33
 Asp Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
 1 5 10

<210> 41
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>

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<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 41

Asp Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
1 5 10

<210> 42

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>

<221> CDS

<222> (1)..(33)

<400> 42

tgg cag tgg ctg ggg atg ggc agt gcc ctg cgg 33
Trp Gln Trp Leu Gly Met Gly Ser Ala Leu Arg
1 5 10

<210> 43

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 43

Trp Gln Trp Leu Gly Met Gly Ser Ala Leu Arg
1 5 10

<210> 44

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>

<221> CDS

<222> (1)..(33)

<400> 44

tac gcc ttc caa cac cag cgg tac tgg gtc gag 33
Tyr Ala Phe Gln His Gln Arg Tyr Trp Val Glu
1 5 10

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<210> 45
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 45
 Tyr Ala Phe Gln His Gln Arg Tyr Trp Val Glu
 1 5 10

<210> 46
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS
 <222> (1)..(33)

<400> 46
 ggc cga gcg cgc cgg gca ggc gtg tcg tcc ttc
 Gly Arg Ala Arg Arg Ala Gly Val Ser Ser Phe
 1 5 10

33

<210> 47
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 47
 Gly Arg Ala Arg Arg Ala Gly Val Ser Ser Phe
 1 5 10

<210> 48
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

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<220>
 <221> CDS
 <222> (1)..(33)

<400> 48
 tcg cag cgt gct ggc atg ggt gag gaa ctg gcc
 Ser Gln Arg Ala Gly Met Gly Glu Glu Leu Ala
 1 5 10

33

<210> 49
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 49
 Ser Gln Arg Ala Gly Met Gly Glu Glu Leu Ala
 1 5 10

<210> 50
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS
 <222> (1)..(33)

<400> 50
 tac gcc ttc cag cac cag cgc tac tgg ctc gag
 Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu
 1 5 10

33

<210> 51
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 51
 Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu
 1 5 10

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<210> 52
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS
 <222> (1)..(33)

<400> 52
 gcg cga ccg cgc cgg gcg ggg gtc tcg tcg ttc
 Ala Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
 1 5 10

33

<210> 53
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 53
 Ala Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
 1 5 10

<210> 54
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS
 <222> (1)..(33)

<400> 54
 tgg cag tgg gcg ggc atg gcc gtc gac ctg ctc
 Trp Gln Trp Ala Gly Met Ala Val Asp Leu Leu
 1 5 10

33

<210> 55
 <211> 11
 <212> PRT
 <213> Artificial Sequence

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<220>

<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 55

Trp	Gln	Trp	Ala	Gly	Met	Ala	Val	Asp	Leu	Leu
1				5					10	

<210> 56

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>

<221> CDS

<222> (1)..(33)

<400> 56

tac	ccg	ttc	cag	cgc	gag	cgc	gtc	tgg	ctc	gaa
Tyr	Pro	Phe	Gln	Arg	Glu	Arg	Val	Trp	Leu	Glu
1				5					10	

33

<210> 57

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 57

Tyr	Pro	Phe	Gln	Arg	Glu	Arg	Val	Trp	Leu	Glu
1				5					10	

<210> 58

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>

<221> CDS

<222> (1)..(33)

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<400> 58

gac ggg gtg cgc cgg gca ggt gtg tcg gcg ttc
 Asp Gly Val Arg Arg Ala Gly Val Ser Ala Phe
 1 5 10

33

<210> 59

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 59

Asp Gly Val Arg Arg Ala Gly Val Ser Ala Phe
 1 5 10

<210> 60

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment.

<220>

<221> CDS

<222> (1)..(33)

<400> 60

gcc cag tgg gaa ggc atg gcg cgg gag ttg ttg
 Ala Gln Trp Glu Gly Met Ala Arg Glu Leu Leu
 1 5 10

33

<210> 61

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 61

Ala Gln Trp Glu Gly Met Ala Arg Glu Leu Leu
 1 5 10

<210> 62

<211> 33

<212> DNA

<213> Artificial Sequence

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<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>

<221> CDS

<222> (1)..(33)

<400> 62

tat	cct	ttc	cag	ggc	aag	cgg	ttc	tgg	ctg	ctg	
Tyr	Pro	Phe	Gln	Gly	Lys	Arg	Phe	Trp	Leu	Leu	
1				5					10		

33

<210> 63

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 63

Tyr	Pro	Phe	Gln	Gly	Lys	Arg	Phe	Trp	Leu	Leu	
1				5					10		

<210> 64

<211> 480

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>

<221> CDS

<222> (3)..(479)

<400> 64

cc	ggc	gcc	gtc	gaa	ctg	ctg	acg	tcg	gcc	cgg	ccg	tgg	ccc	gag	acc	
	Gly	Ala	Val	Glu	Leu	Leu	Thr	Ser	Ala	Arg	Pro	Trp	Pro	Glu	Thr	
	1				5					10				15		47

gac	cgg	cca	cgg	cgt	gcc	gcc	gtc	tcc	tcg	ttc	ggg	gtg	agc	ggc	acc	
Asp	Arg	Pro	Arg	Arg	Ala	Ala	Val	Ser	Ser	Phe	Gly	Val	Ser	Gly	Thr	
				20					25					30		95

aac	gcc	cac	gtc	atc	ctg	gag	gcc	gga	ccg	gta	acg	gag	acg	ccc	gcg	
Asn	Ala	His	Val	Ile	Leu	Glu	Ala	Gly	Pro	Val	Thr	Glu	Thr	Pro	Ala	
			35					40					45			143

gca	tcg	cct	tcc	ggt	gac	ctt	ccc	ctg	ctg	gtg	tcg	gca	cgc	tca	ccg	
Ala	Ser	Pro	Ser	Gly	Asp	Leu	Pro	Leu	Leu	Val	Ser	Ala	Arg	Ser	Pro	
		50					55						60			191

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gaa gcg ctc gac gag cag atc cgc cga ctg cgc gcc tac ctg gac acc 239
 Glu Ala Leu Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr
 65 70 75

acc ccg gac gtc gac cgg gtg gcc gtg gca cag acg ctg gcc cgg cgc 287
 Thr Pro Asp Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg
 80 85 90 95

aca cac ttc gcc cac cgc gcc gtg ctg ctc ggt gac acc gtc atc acc 335
 Thr His Phe Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr
 100 105 110

aca ccc ccc gcg gac cgg ccc gac gaa ctc gtc ttc gtc tac tcc ggc 383
 Thr Pro Pro Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly
 115 120 125

cag ggc acc cag cat ccc gcg atg ggc gag cag ctc gcc gcc gcc cat 431
 Gln Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala His
 130 135 140

ccc gtg ttc gcc gac gcc tgg cat gaa gcg ctc cgc cgc ctt gac aac c 480
 Pro Val Phe Ala Asp Ala Trp His Glu Ala Leu Arg Arg Leu Asp Asn
 145 150 155

<210> 65

<211> 159

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 65

Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp
 1 5 10 15

Arg Pro Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn
 20 25 30

Ala His Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala
 35 40 45

Ser Pro Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
 50 55 60

Ala Leu Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr
 65 70 75 80

Pro Asp Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
 85 90 95

His Phe Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr
 100 105 110

00404650
 00220

Pro Pro Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
 115 120 125

Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala His Pro
 130 135 140

Val Phe Ala Asp Ala Trp His Glu Ala Leu Arg Arg Leu Asp Asn
 145 150 155

<210> 66

<211> 120

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>

<221> CDS

<222> (3)..(119)

<400> 66

tc ctc ggg gct ggg tca cgg cac gac gcg gat gtg ccc gcg tac gcg 47
 Leu Gly Ala Gly Ser Arg His Asp Ala Asp Val Pro Ala Tyr Ala
 1 5 10 15

ttc caa cgg cgg cac tac tgg atc gag tgc gca cgc ccg gcc gca tcc 95
 Phe Gln Arg Arg His Tyr Trp Ile Glu Ser Ala Arg Pro Ala Ala Ser
 20 25 30

gac gcg ggc cac ccc gtg ctg ggc t 120
 Asp Ala Gly His Pro Val Leu Gly
 35

<210> 67

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
 synthase fragment

<400> 67

Leu Gly Ala Gly Ser Arg His Asp Ala Asp Val Pro Ala Tyr Ala Phe
 1 5 10 15

Gln Arg Arg His Tyr Trp Ile Glu Ser Ala Arg Pro Ala Ala Ser Asp
 20 25 30

Ala Gly His Pro Val Leu Gly
 35

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<210> 68
 <211> 480
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA encoding synthetic
 PKS synthase fragment

<220>
 <221> CDS
 <222> (1)..(480)

<400> 68
 tcg gcc agg ccg tgg ccg cgg acc ggc cgt ccg cgc cgt gcg gcg gtc 48
 Ser Ala Arg Pro Trp Pro Arg Thr Gly Arg Pro Arg Arg Ala Ala Val
 1 5 10 15

tcg tcg ttc ggg gtg agc ggc acc aac gcc cac atc atc ctg gag gcc 96
 Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala
 20 25 30

gga ccc gac cag gag gag ccg tcg gca gaa ccg gcc ggt gac ctc ccg 144
 Gly Pro Asp Gln Glu Glu Pro Ser Ala Glu Pro Ala Gly Asp Leu Pro
 35 40 45

ctg ctc gtg tcg gca cgg tcc ccg gag gca ctg gac gag cag atc ggg 192
 Leu Leu Val Ser Ala Arg Ser Pro Glu Ala Leu Asp Glu Gln Ile Gly
 50 55 60

cgc ctg cgc gac tat ctc gac gcc gcc ccc ggc gtg gac ctg gcg gcc 240
 Arg Leu Arg Asp Tyr Leu Asp Ala Ala Pro Gly Val Asp Leu Ala Ala
 65 70 75 80

gtg gcg cgg aca ctg gcc acg cgt acg cac ttc tcc cac cgc gcc gta 288
 Val Ala Arg Thr Leu Ala Thr Arg Thr His Phe Ser His Arg Ala Val
 85 90 95

ctg ctc ggt gac acc gtc atc acc gct ccc ccc gtg gaa cag ccg gcc 336
 Leu Leu Gly Asp Thr Val Ile Thr Ala Pro Pro Val Glu Gln Pro Gly
 100 105 110

gag ctc gtc ttc gtc tac tcg gga cag ggc acc cag cat ccc gcg atg 384
 Glu Leu Val Phe Val Tyr Ser Gly Gln Gly Thr Gln His Pro Ala Met
 115 120 125

ggt gag cgg ctc gcc gca gcc ttc ccc gtg ttc gcc gac ccg gac gta 432
 Gly Glu Arg Leu Ala Ala Phe Pro Val Phe Ala Asp Pro Asp Val
 130 135 140

ccc gcc tac gcc ttc cag cgg cgg ccc tac tgg atc gag tcc gcg ccg 480
 Pro Ala Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile Glu Ser Ala Pro
 145 150 155 160

<210> 69
 <211> 160
 <212> PRT

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<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 69

Ser Ala Arg Pro Trp Pro Arg Thr Gly Arg Pro Arg Arg Ala Ala Val
1 5 10 15

Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala
20 25 30

Gly Pro Asp Gln Glu Glu Pro Ser Ala Glu Pro Ala Gly Asp Leu Pro
35 40 45

Leu Leu Val Ser Ala Arg Ser Pro Glu Ala Leu Asp Glu Gln Ile Gly
50 55 60

Arg Leu Arg Asp Tyr Leu Asp Ala Ala Pro Gly Val Asp Leu Ala Ala
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Val Ala Arg Thr Leu Ala Thr Arg Thr His Phe Ser His Arg Ala Val
85 90 95

Leu Leu Gly Asp Thr Val Ile Thr Ala Pro Pro Val Glu Gln Pro Gly
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Glu Leu Val Phe Val Tyr Ser Gly Gln Gly Thr Gln His Pro Ala Met
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